

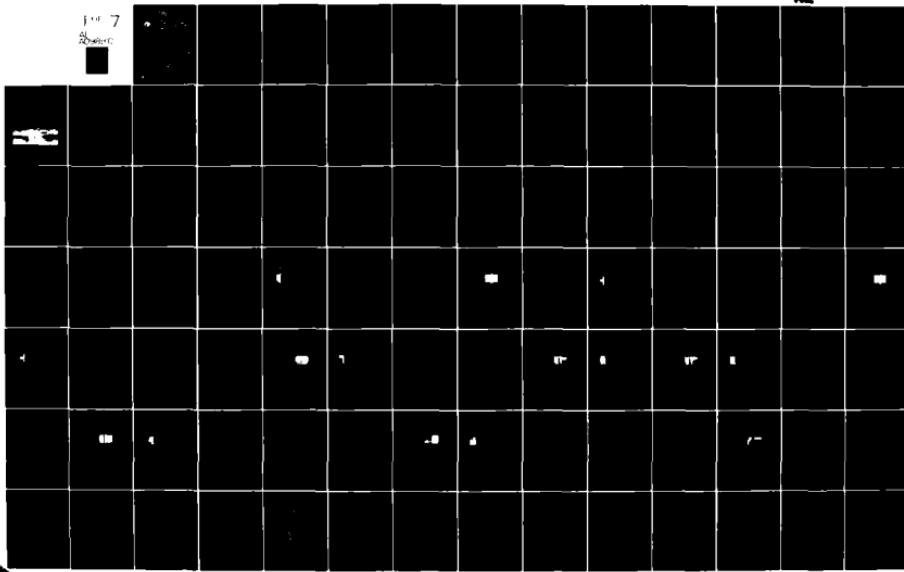
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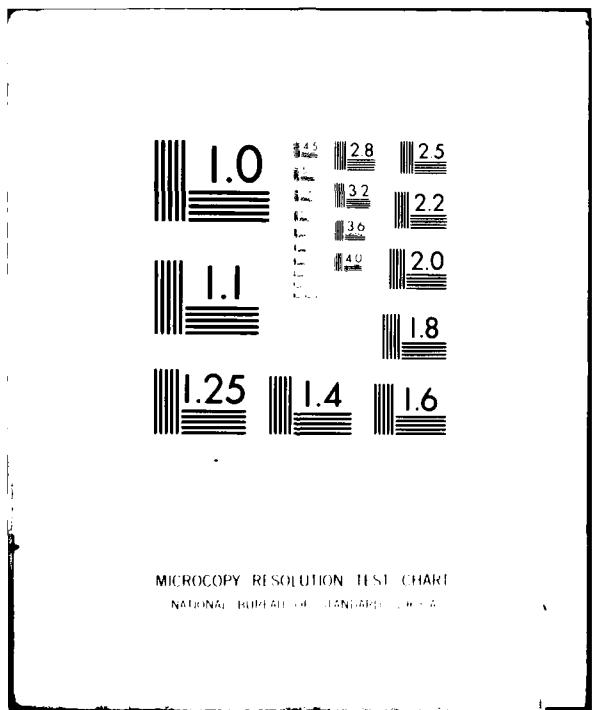
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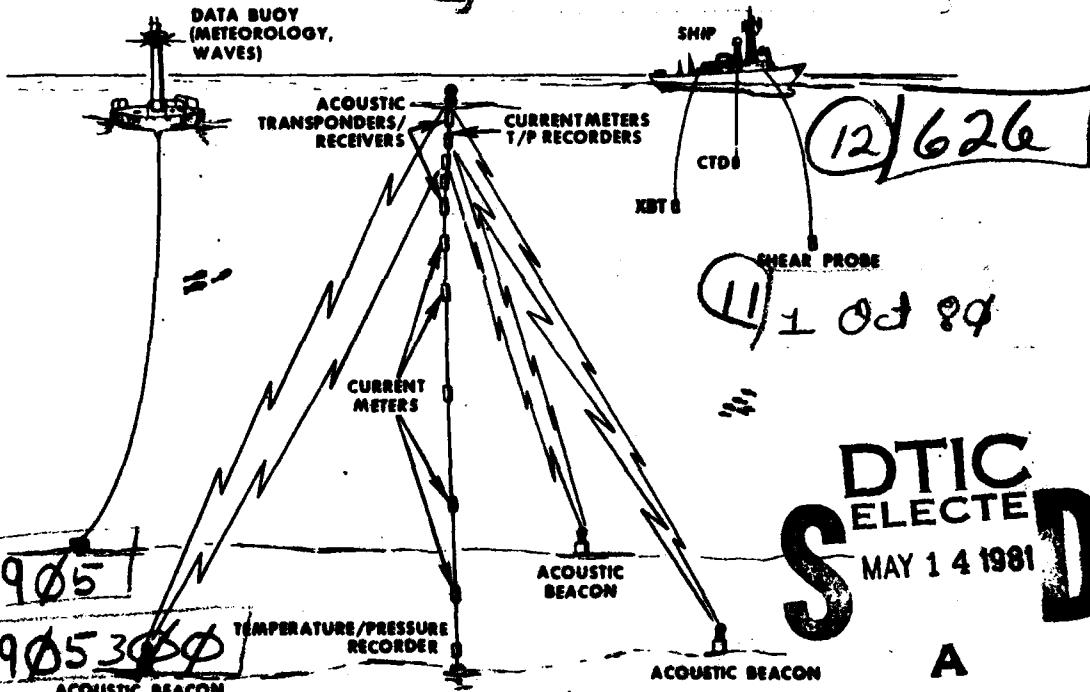
Naval Ocean Research
and Development Activity
NSTL Station, MS 39529



A Comprehensive Graphical Representation of Data Obtained in the Acoustically Tracked Oceanographic Mooring (ATOM) Experiments.

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Physical Oceanography Branch

Ocean Science and Technology Laboratory

SEPTEMBER 1980

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ABSTRACT

The Acoustically Tracked Ocean Mooring (ATOM) study spanned ~~the~~ period 15 December 1979 - 17 January 1980. Time series of currents, temperatures and mooring parameters as well as profiles of temperature, conductivity and current were obtained. This report presents these data and derived statistics as a graphical summary.

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1.0 INTRODUCTION

This report contains a graphical data summary of the physical oceanographic and meteorological data collected during the Acoustically Tracked Oceanographic Mooring (ATOM) experiments that spanned the period 15 December 1979 through 17 January 1980. The following paragraphs summarize the results presented in the extensive report.

1.1 OBJECTIVES

There are five major objectives to the present study, three of which are primarily scientific in nature and two of which are mainly technical. These are:

Scientific

- a) to determine the degree to which high frequency variability in the upper range of the internal gravity wave frequency spectrum is strongly dependent on the proximity of the peak in the buoyancy profile and on the effect of modulation by low frequency processes;
- b) to determine the degree to which low frequency processes are determined by local surface meteorology;
- c) to measure the vertical coherence of the high frequency current and temperature fields;

Technical

- d) to investigate the contamination of the current and temperature data induced by mooring motion; and
- e) to determine whether it is possible to remove a significant amount of the mooring motion contamination.

1.2 DATA REQUIREMENTS

In order to meet the objectives, current and temperature data were required at a rapid sampling rate (about 1 sample/minute) in the upper ocean (100 m - 500 m) over a period of about one month. At the times of deployment and recovery, profiles of temperature and salinity as functions of depth were required to assess the local buoyancy profile and to provide information of the vertical wavenumber structure of these quantities. Current profiles (taken with expendable probes) were required to obtain detailed information on the vertical wavenumber structure of the current field on scales smaller than the current meter separation. XBT and AXBT surveys were required to assess the mesoscale features of the oceanic circulation. Meteorological data and wave data from nearby data buoys were required to determine the degree to which the local meteorology affects the low frequency processes. In order to measure the mooring motion, acoustic tracking devices, force-vector recorders and temperature-pressure recorders were required.

1.3 DATA DESCRIPTION

In this section, the observed data will be summarized, beginning with the large scale ocean features which provided the background environment for this study. This will be followed by a short description of the meteorology, the fine scale structures observed at the beginning and end of the experiment, the observed currents and temperatures. The mooring motion will be discussed last.

1.4 LARGE SCALE FEATURES

The dominating oceanic feature of the Gulf of Mexico is the Loop Current and its associated eddies. An airborne XBT survey conducted as the ship was enroute to the deployment site (Dec. 15, 1979) indicated the presence of strong horizontal temperature gradients in the operating area. Depth contours of the isotherms indicated the existence of a strong baroclinic current toward the northwest. From the limited survey, there are not enough data to determine whether this region of strong currents was a direct part of the Loop Current or a recently separated eddy. Rough calculations made shortly after the survey indicated that the vertical geostrophic shear was on the order of 20 cm/s/100 m. Comparison of LORAN-C navigational data with dead reckoning positions indicated the presence of surface currents of 1 to 4 knots (0.5 to 2 m/s) during the recovery and deployment cruises. Subsurface measurements of the currents at depths between 300 and 700 m over the time period of the mooring indicated current speeds between 20 and 70 cm/s.

1.5 METEOROLOGY

Meteorological data from two NOAA/NDBO buoys, numbers 42001 and 42002, were obtained from the NOAA Data Buoy Office, NSTL Station, and the daily weather maps for the period of the experiment were obtained from the National Weather Service, NOAA. Data buoy 42002 operated correctly during the entire period. The nearer data buoy, 42001, lost wind speed and direction as well as barometric pressure information from 2 January 1980 - 15 January 1980. Wave height and period information were lost for the period 5 January 1980 - 8 January 1980. Air and water temperature information were lost between 4 January 1980 and 13 January 1980.

From the data obtained by buoy 42002, there were four major events (defined as winds over 10 m/s and waves over 2 m). These occurred on December 17-18, 23-25, January 4, and January 13. For the data available from 42001, the major events tended to lag those at 42002 by about 6-8 hours. Events occurred on December 17-18, 24-26, December 31 - January 1, (large waves were observed on January 5, 11, and 13, but no wind data were obtained for those days). A cold front passed through the region on December 15 which then became stationary through the 17th. The next cold front passed through the region between December 24 and 26. This was followed by a cold front passage that occurred between December 30 and 31. A cold front passed on January 5. Between January 9 and 14, a front, alternately cold, stationary, warm, cold, slowly passed through the region. Thus, all periods of strong wind and waves occurred with the passage of cold fronts. The rapid changes in wind speed and direction typically generate internal/inertial waves in the water, and these "events" will be analyzed to determine their effects on high wave number vertical shear.

1.6 FINE SPATIAL SCALE FEATURES

The fine scales (1-10 m in the vertical, 1-10 km in the horizontal) were determined by XBTs, CTDs and XCPs (Expendable Current Probes - also called Shear Probes). XBT and CTD data were collected on both the deployment and recovery cruises; XCP data were collected only on the deployment cruise, soon after deployment of the mooring.

1.7 XBT DATA

On the deployment cruise, the XBT's were dropped in a very closely spaced pattern, generally within the region bounded by $25^{\circ}45'N$, $26^{\circ}00'N$, $89^{\circ}36'W$ $89^{\circ}55'W$ (Sections 4.1 and 4.2). The close spacing of stations provided a detailed

look at the horizontal structure of the temperature field that existed just before the mooring deployment. An additional section was made on the return from the operations area.

The XBT spacing on the recovery cruise was considerably larger than during the deployment phase, sections being made on both the trip to and the trip from the operations area. Time did not permit a detailed pattern as was run on the deployment cruise. Results of the second sampling prior to mooring recovery indicated that the basic upper ocean temperature structure was similar to the deployment phase, but fine structure variability at depth was more apparent.

The XBT data were taken with the aid of a mini-computer (Hewlett-Packard 9825A) based system. The system was originally developed by NORDA Code 350 with the data being recorded on magnetic tape. The system was considerably modified by Mark Bergin, NORDA Code 331, to record the data on a disk mass storage device. The plotting software was also developed by Bergin to produce waterfall plots of the temperature as a function of depth with the spacing between the various plots determined by the great circle distance between stations. The waterfall program was subsequently modified to plot the temperature, high-passed in the vertical, to be plotted as waterfall diagrams. The two types of waterfall plots are shown in Sections 4.1 and 4.2.

1.8 CTD DATA

During the deployment cruise, most of the CTD stations were taken in the same region bounded by $25^{\circ}45'N$, $26^{\circ}00'N$, $89^{\circ}40'W$ and $89^{\circ}55'W$. The majority of the stations were made near the mooring. On the recovery cruise, a number of CTD stations (1-21) were made just downstream of the mooring while the rest were made on a series of three transects northwest of the mooring position.

CTD No. 4017 was employed in these measurements. Calibrations were performed prior to the two cruises. The average static errors for temperature, conductivity and salinity were:

$$E_T = -0.0014^{\circ}\text{C}$$

$$E_C = -0.00052 \text{ mmho/cm}$$

$$E_S = -0.00014 \text{ ‰}$$

Dynamic drop calibration tests were also performed. The time constants derived from these tests were approximately

$$t_T = 243 \text{ ms}$$

$$t_C = 59 \text{ ms.}$$

The temperature and salinity profiles from the deployment cruise showed a very sharp mixed layer down to about 100 m. From about 100 m to about 800-1000 m a strong thermocline was observed. Just below the mixed layer, the salinity was found to increase until a peak was reached at about 150 m. The salinity then decreased with depth until a weak minimum was found near 800 m. Below about 1200 m, both the temperature and salinity remained approximately constant. These features are illustrated in Sections 4.3.1 and 4.4.1.

The profiles of sigma-t, Brunt Vaisala (B-V) frequency as a function of depth are presented in Sections 4.3.2 and 4.4.2. A very sharp peak in the buoyancy profile (with a B-V frequency of about 24 cph) is typical near 100 m during the deployment. The profiles below about 100 m are characterized by a large number of oscillations in the vertical of the B-V profile, indicative of a strongly stepped structure. Between about 200 m and 500 m the average B-V frequency is about 3 cph with fluctuations from between 2 and 5 cph. Above 100 m, the water is approximately isopycnic, with the B-V frequencies below about 1 cph.

The temperature-salinity curves for the region during the deployment phase are all basically very similar. T-S plots are shown in Sections 4.3.3 and 4.4.3.

The CTD data taken during the deployment and recovery phases differed notably. In the recovery phase, salinity was not homogeneous down to 100 m, typically several mixed layers appeared to be present. The temperature profiles also exhibited a layered structure. The salinity maxima occurred near 170 m and salinity minima near 800 m, but the profiles generally had more finestructure than those taken in the previous phase. Indeed, near 800 m, there is considerable fine scale structure in both the temperature and salinity profiles.

The recovery profiles lack a single strong peak in buoyancy frequency that occurred earlier. The maximum B-V frequency is about 12 cph: about half of the maximum observed during the deployment cruise.

The T-S curves also exhibit significant differences from those obtained on the deployment cruise. The presence of a "nose" on the T-S plots and the curvature inflection are evidence of horizontal intrusions and precipitous formation of new water types.

1.9 XCP DATA

The XCP (Expendable Current Probe or Shear Probe) is a small dropped probe, similar to an XBT in that it measures temperature as a function of time and the depth is determined by an empirical equation relating depth to time of fall. It differs from the XBT in that it also measures the water current relative to the instrument as it falls through the water. The XCP senses the electric field potential induced by the motion of the ocean current through the earth's magnetic field.

About 45 of these probes were dropped during the deployment cruise. When possible, the XCPs were dropped when a concurrent CTD cast reached 350 m. This permits the calculation of vertical profiles of Richardson number in the vicinity of the mooring shortly after its deployment. It will also permit the intercomparison between shear observed by the XCPs and the current meters on the mooring during the one day period following implantation.

The uncorrected XCP traces are presented in Section 7.0. It can be seen that between about 100 m and 200 m, the shear in the V profile is about 35 cm/s/100 m. In addition there are small scale variations in the profile with vertical length scales on the order of about 10-20 m. Similar small scale variations are clearly seen in the U profile, with typical scale sizes on the order of 10-30 m.

1.10 CURRENTS AND TEMPERATURES

The currents were measured by 21 current meters on a subsurface mooring located at $25^{\circ}48.33'N$, $89^{\circ}44.65'W$. Thirteen NBIS ACMs and eight VACMs were employed. The mooring configuration is shown in Figure 14. The depths shown on the mooring schematic diagram are the nominal depths of the instruments, assuming no current. The actual depths were considerably different from the design depths. The time history of the depths of the current meters will be discussed in detail in the following paragraphs.

Due to the hydrodynamic self-interference caused by the current meter's structure, the accuracy of the meters is estimated to be about $\pm 5\%$ of the measured speed. The variations in accuracy are strongly dependent on the orientations of the meters with respect to the flow.

All current meters had thermistors to measure temperature. In addition, four temperature-pressure recorders were employed on the mooring for more detail in temperature measurement.

All the ACMs were set to a sampling interval of 1 minute. The upper two VACMs were set to a sampling interval of 15/16 minute, while the lower six VACMs were set to sample at 15/8 minute. For the ACMs, the maximum frequency which can be resolved is 30 cph. This is about an order of magnitude greater than the expected high frequency interval wave band, which could be expected near 3 cph (based on the B-V frequency between 200 and 500 m).

Sections 3.1.2 and 3.2.2 provide a synopsis of current meter data. It can be seen that the currents were about 40 cm/s or less until December 26, rising to a maximum value of nearly 70 cm/s on January 2. The currents remained strong until January 8, when they fell below 50 cm/s. Two minima were noted, one on January 9 and the other on January 11.

The currents were typically toward the WNW. The only time there was a southerly component occurred between December 26 and 28. The currents were northerly of NW only on December 31 - January 1 and January 6-7.

The statistics for the currents for this period are summarized in terms of two-dimensional (bivariate) histograms of current speed and direction in Sections 3.1.1 and 3.2.1. Separate speed and direction histograms plus the cumulative frequency plots of the current speeds are also given in these sections.

The current meters also recorded temperatures; typically, two records of temperature for each ACM and one per VACM are presented. All of the upper meters registered a minimum on December 31/January 1 coinciding with the period of maximum current. The bottom meter recorded a maximum temperature during the same period indicating advection of slightly warmer water at depth. This period encompassed the maximum depression of the mooring registered by the pressure recorders. Diurnal tidal frequency modulations of the pressure and temperature series are direct evidence that tidal currents exert considerable drag on the mooring causing the upper part of the mooring to "bob" vertically 20 m to 40 m during tidal cycles.

1.11 MOORING MOTION

The major technical goals of this study require investigation of the types of mooring motions that occur on a high tension subsurface mooring, the effects of the mooring motion on the physical oceanographic data and the possibility of removing the effects of mooring motion contamination.

A number of different sensors were employed which could give information on the types of mooring motion. The gross horizontal motions of the mooring were determined by acoustic ranging. Two recording receivers/transmitters (R/Ts) were placed on the mooring at the nominal depths of 99 m and 220 m. Three transponders were located on the bottom which gave three ranges of both of the R/Ts. This is theoretically sufficient to determine the position of the R/Ts. However, one of the transponders failed early in the deployment and only two were available for the entire period. Nevertheless, even if only two ranges are known and the depths of the R/Ts are known functions of time, it is possible to determine the horizontal positions of the R/Ts. In the preliminary work presented here (and computed by R. Spindel (WHOI)), the depths were assumed to be 100 and 200 m for the entire period. This introduces an error which can later be corrected by using the actual depths.

In addition to the direct ranging acoustic positioning devices, two sets of Doppler position locators were installed on the mooring near the R/Ts. Due, apparently to unanticipated reflections with the water surface, the Doppler devices did not return useful data in the low frequency range. Extraction of useful data from the Doppler data is still questionable at the time of this report.

To determine the orientation, acceleration and tension on the mooring line, three Force Vector Recorders (FVRs) were placed in the mooring. Of these, only one operated for the entire period. One failed entirely and the third, while remaining in partial operation for the beginning period of the deployment, did not appear to return any useful data.

In order to determine the depth of the mooring as a function of time, four temperature-pressure recorders (TPs) were installed in the mooring. These all worked properly for the entire mooring period, but some data were lost when the instrument depth exceeded the pressure/temperature limits. However, it is probable that the total depth record can be reconstructed with the use of the known temperature/depth relation from the CTD profiles and the temperature curves obtained from the current meters.

Finally, both types of current meters provided some information of the torsional characteristics of the mooring line. The case orientation of the ACMs were recorded every 8 minutes. The case orientations and vane orientations on the VACMs were recorded instantaneously every sampling period. While these were not as fast as the sampling rate of the FVR, they did provide ancillary torsional information.

1.12 ACOUSTIC TRACKING RESULTS

Relative north-south and east-west displacements of the lower R/T are shown in Section 5.0. The maximum southward displacement occurred on December 27-28 and the maximum westward displacement occurred during the same period. The reader should note that this is consistent with the current meter records, and it can be seen that the currents were between about 50 and 60 cm/s and that the current had a southward component during that period. The maximum northward displacement occurred between

December 30 and January 1. This coincided with the period of strongest current and the most northward direction of the current as well as the deepest excursion of the mooring. East-West displacements of the mooring were small.

1.13 TEMPERATURE-PRESSURE RECORDER DATA

Four temperature-pressure recorders were used; the pressure and temperature record for the uppermost T-P recorder over the period of the experiment was strongly affected by the depression of the mooring. The pressure recorded went off scale between December 29 and January 2. The deepest penetration of the T-P recorder occurred during this period. The pressure data and the concurrent temperature data show a striking in-phase correlation. Due to this strong correlation, it is possible to relate the approximate depth to the observed temperature and thus, the depths during the missing period can be inferred from the temperatures measured on the current meters.

1.14 FORCE VECTOR RECORDER (FVR) DATA

Only the uppermost FVR worked and returned data from the entire period of the experiment. The data returned consisted of three orthogonal components of acceleration and two orthogonal (nominally horizontal) components of magnetic field.

Until December 27, the records of all measured components remained quite smooth. Abruptly, the signals became very noisy, with the exception of the vertical component of acceleration. In particular, the X-acceleration channel had two times the signal level of the Y-acceleration channel, and the Y-magnetic channel had twice the level of the X-magnetic channel. It is possible that the data after December 27 were highly aliased due to very rapid transverse vibrations and torsional rotations, however, this hypothesis does not appear to be consistent with the data. The transition from the period of smooth data to the period of very noisy data occurs without a harbinger, so it is difficult to connect it with evolving processes.

The magnetic data for the FVRs have been converted into angular displacements with respect to magnetic north. During the period of noisy data, the orientation of the FVR varied by about 120° , with each sample appearing independent of the previous sample (the sampling interval was about 3 sec). Such series are indicative of heavily aliased sampling, instrument noise or an extremely rapid vacillation of the mooring element orientation.

1.15 CURRENT METER ORIENTATION DATA

The case orientations of the uppermost VACM were examined during the same period as the noisy FVR data were first observed. The case orientations for one hour were sampled once every 15/16 minute and showed a range of about 20° - 30° during this period. A similar examination was made of the case orientation of one of the ACMs (the uppermost one, number 058) for this same period. The case orientations were sampled as instantaneous values once every 8 minutes. The range of case orientations varied by about 10° over a one hour period which overlapped the FVR noisy data.

These observations are inconsistent with the notion that the FVR was sampling a very rapid torsional rotation of the mooring line. If the VACM were to experience such rapid rotations, one would expect that the observed samples could be statistically independent and fall in the same region as the FVR data. The same argument applies to the ACM orientations data.

One possible explanation for this apparent discrepancy could be that between all instruments, swivels were mounted to reduce torsional coupling. On the other hand, the swivels were under a great amount of tension and such large rotations would be expected to produce step-like jumps in the data from lower instruments. This would give a picture wherein the points would appear independent. This does not appear to be the case with the VACM directly below the FVR, leaving the inconsistency unresolved, unless the FVR experienced an electronic failure. The lack of clear cross-modulation between the x-y axes on both the acceleration and magnetic channels lends support to this latter hypothesis.

1.16 SUMMARY

The current meters and pressure/temperature recorders provided a comprehensive oceanographic data set for the most densely instrumented deep ocean mooring yet attempted. The initial analyses of the time series show relatively little white noise in the high frequency end of the spectrum, but this does not mean that mooring motions do not affect the high frequency spectra. The extensive CTD, XBT, XCP data and surface meteorology provide a firm foundation for integrating mooring instrument records with shipboard data to ascertain dynamic stability, shear and effects of meteorology. A precise assessment of mooring motion effects would have been considerably aided by better records of performance by the Doppler Acoustic System and the force vector recorders, but an effective analysis still can be made with the available data. At the time of submission of this data report, we conclude that high frequency high wave number measurements of the internal gravity wave band are probably "contaminated" by mooring motions in the upper ocean; the extent of contamination is under continuing analysis.

1.17 ACKNOWLEDGEMENTS

We gratefully acknowledge the efforts of John Dahlen and associates of the C.S. Draper Lab, who supplied the FVRs and reduced the T/P recorder data, Dr. Robert Spindel and associates, who supplied the acoustic tracking gear and provided the reduced data, the master and crew of the USNS LYNCH (Fig. 1) who aided the deployment and recovery, Drs. Z. Hallock and O. von Zweck and others of NAVOCEANO for their data reduction and plotting programs and all others who have contributed to this report.



Figure 1.

2.0 NAVIGATION/STATION LOCATIONS (Figures 2-13)

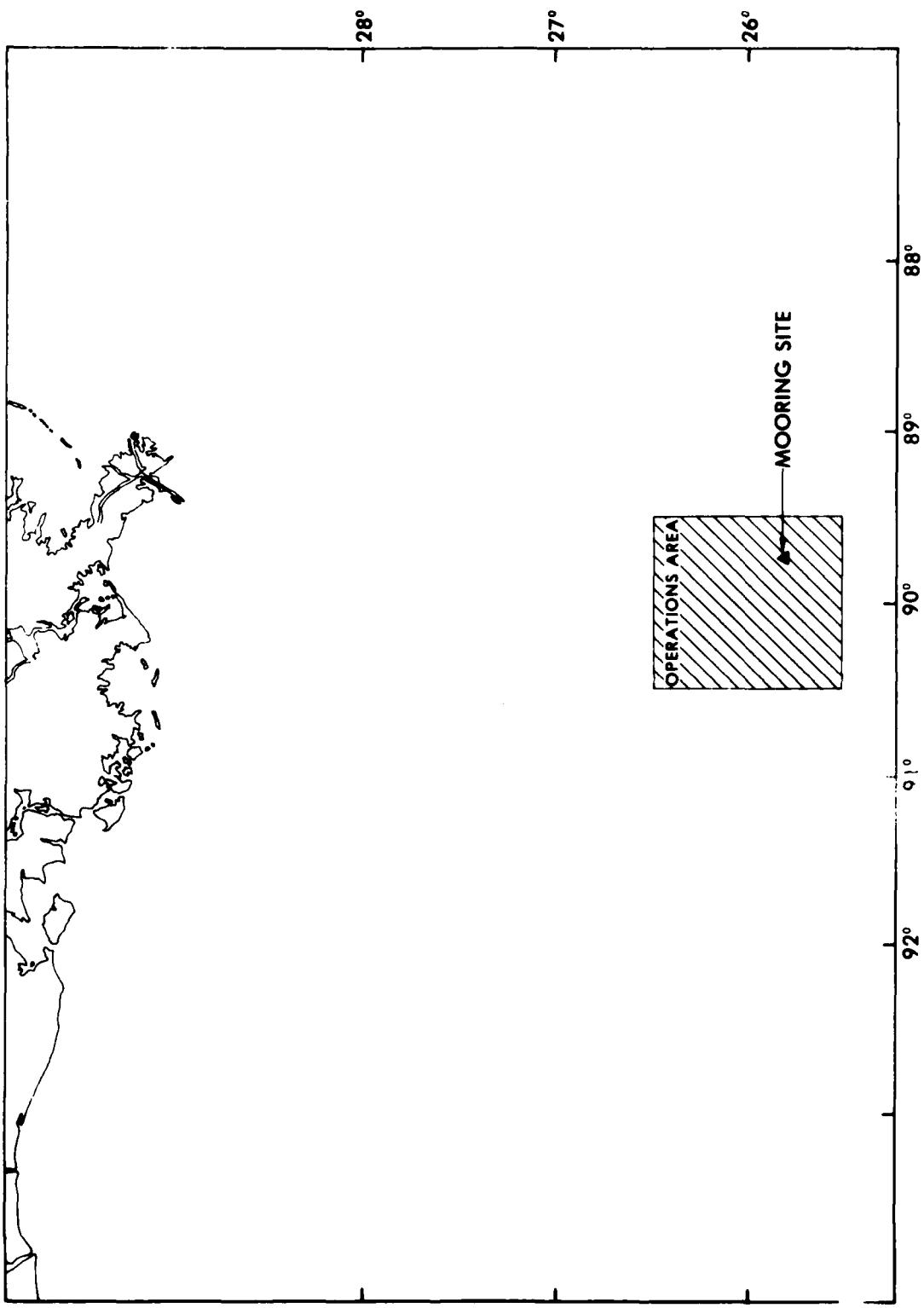


Figure 2.

ATOM '79 - RECOVERY CRUISE

XBT STATIONS - ALL

JANUARY, 1980

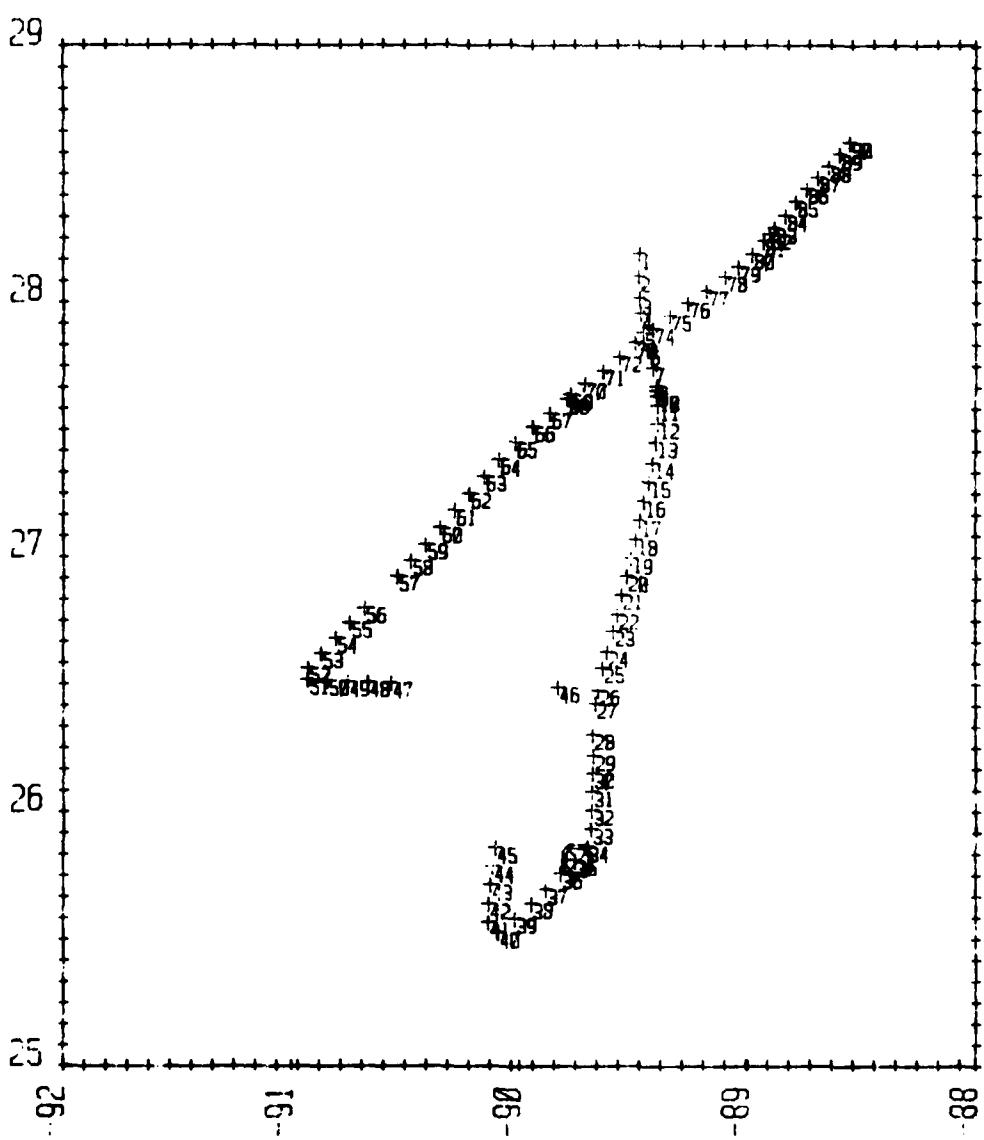


Figure 3.

ATOM '79 - DEPLOYMENT CRUISE
XBT STATIONS - ALL
DECEMBER, 1979

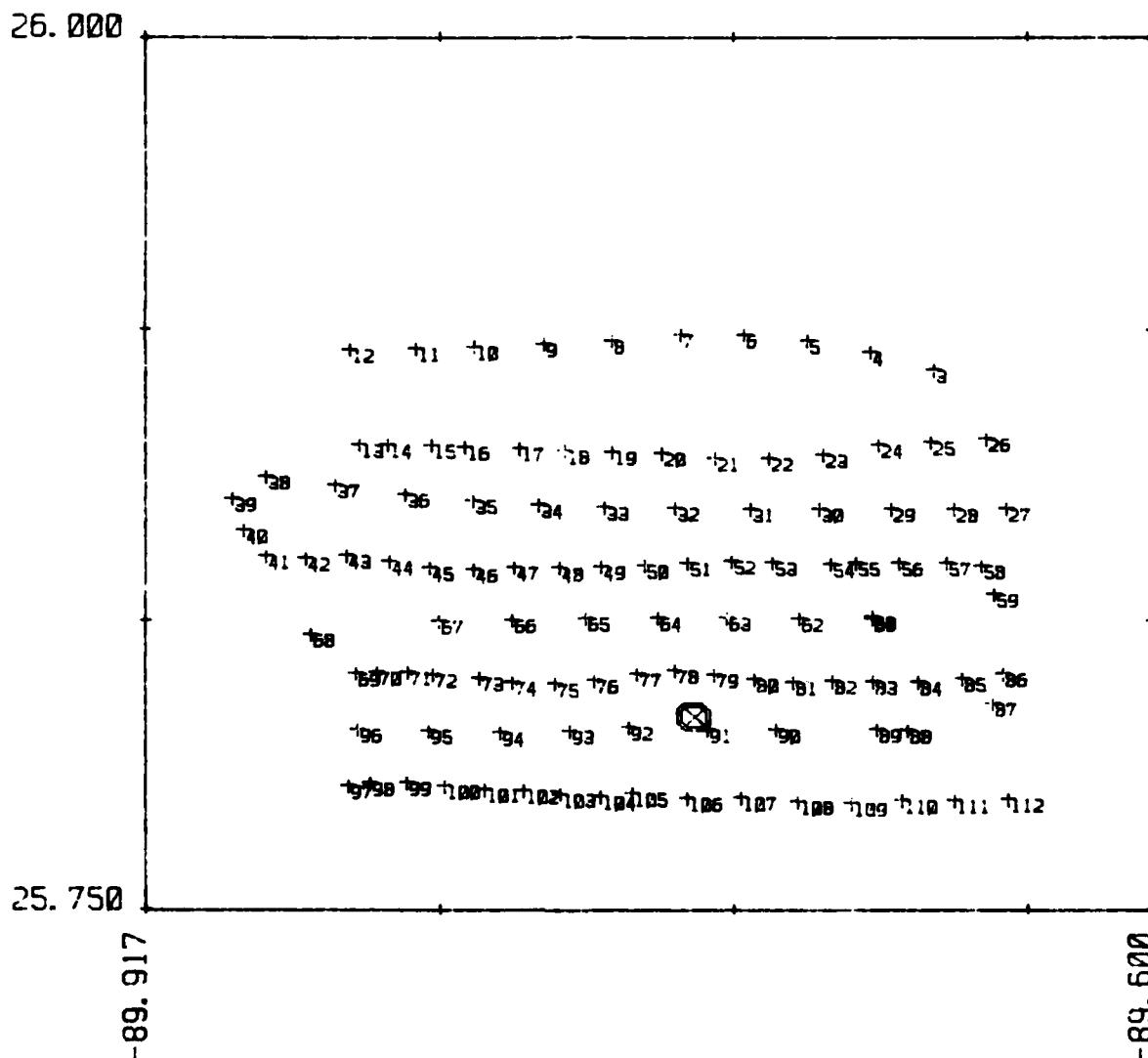


Figure 4.

ATOM '79 DEPLOYMENT CRUISE

CTD POSITIONS - ALL STATIONS

DEC., 1979

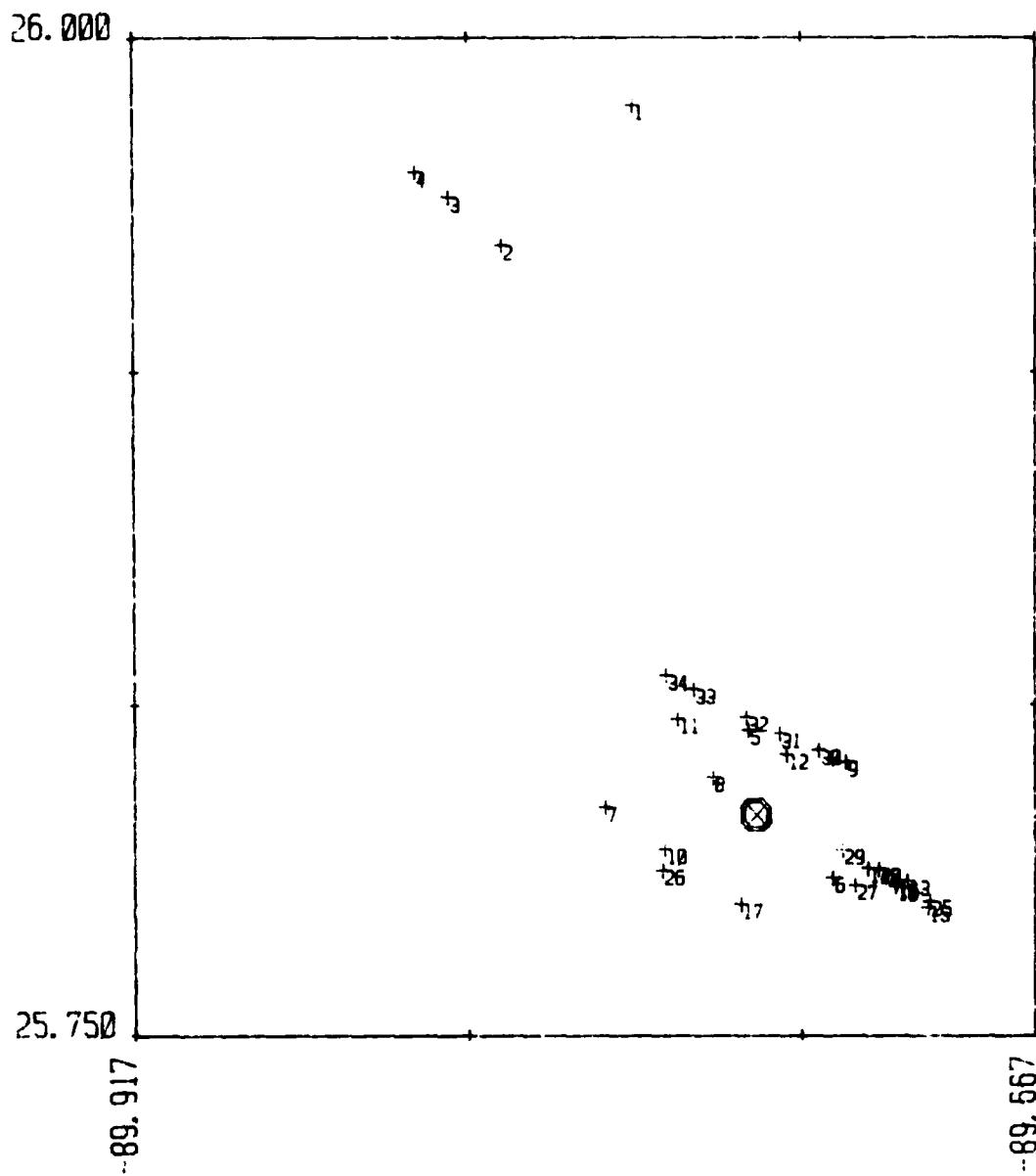


Figure 5.

ATOM '79 DEPLOYMENT CRUISE

CTD POSITIONS STATIONS S-32

DEC., 1979

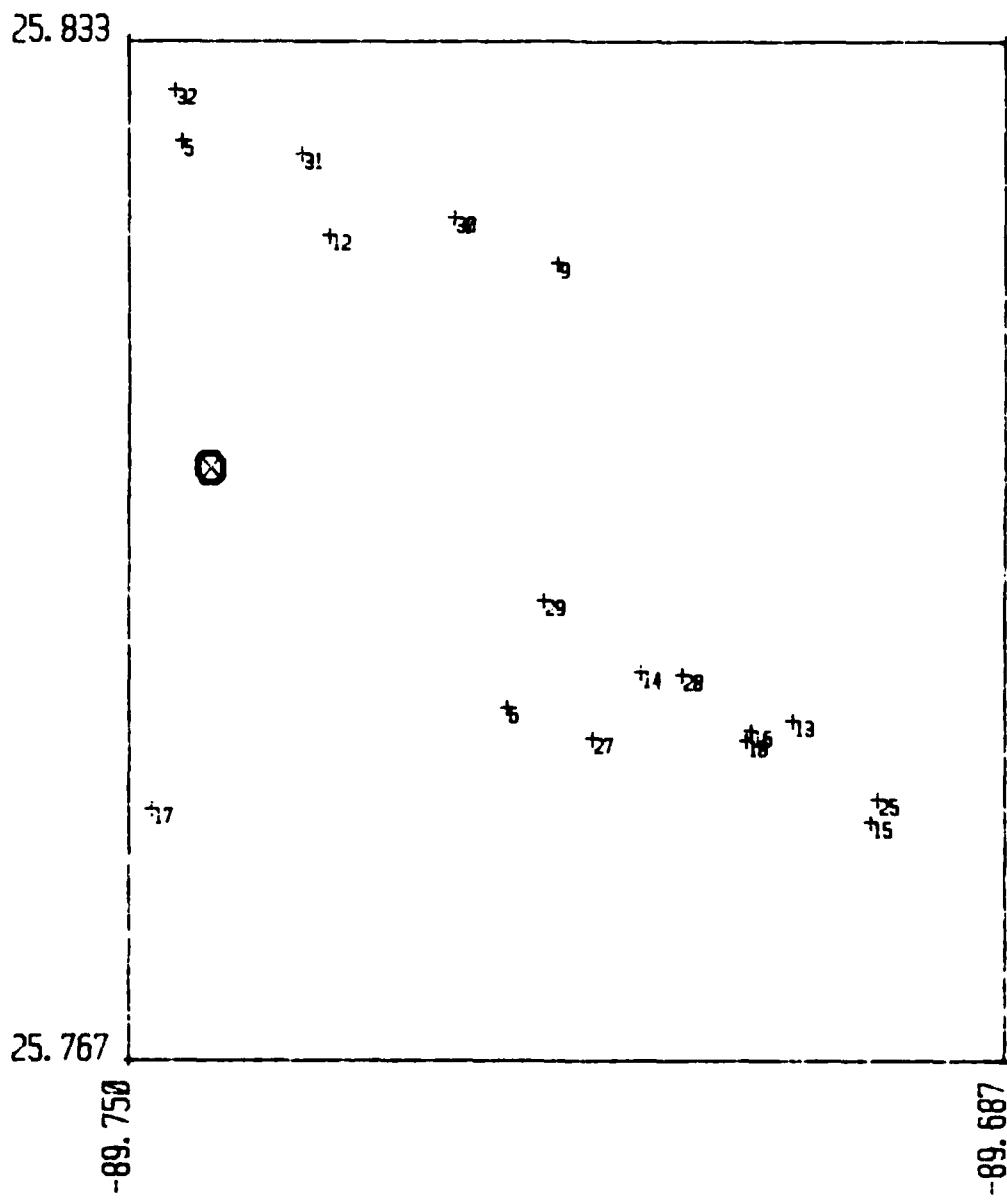


Figure 6.

ATOM '79 RECOVERY CRUISE

CTD POSITIONS, STATIONS 28-40

JANUARY , 1980

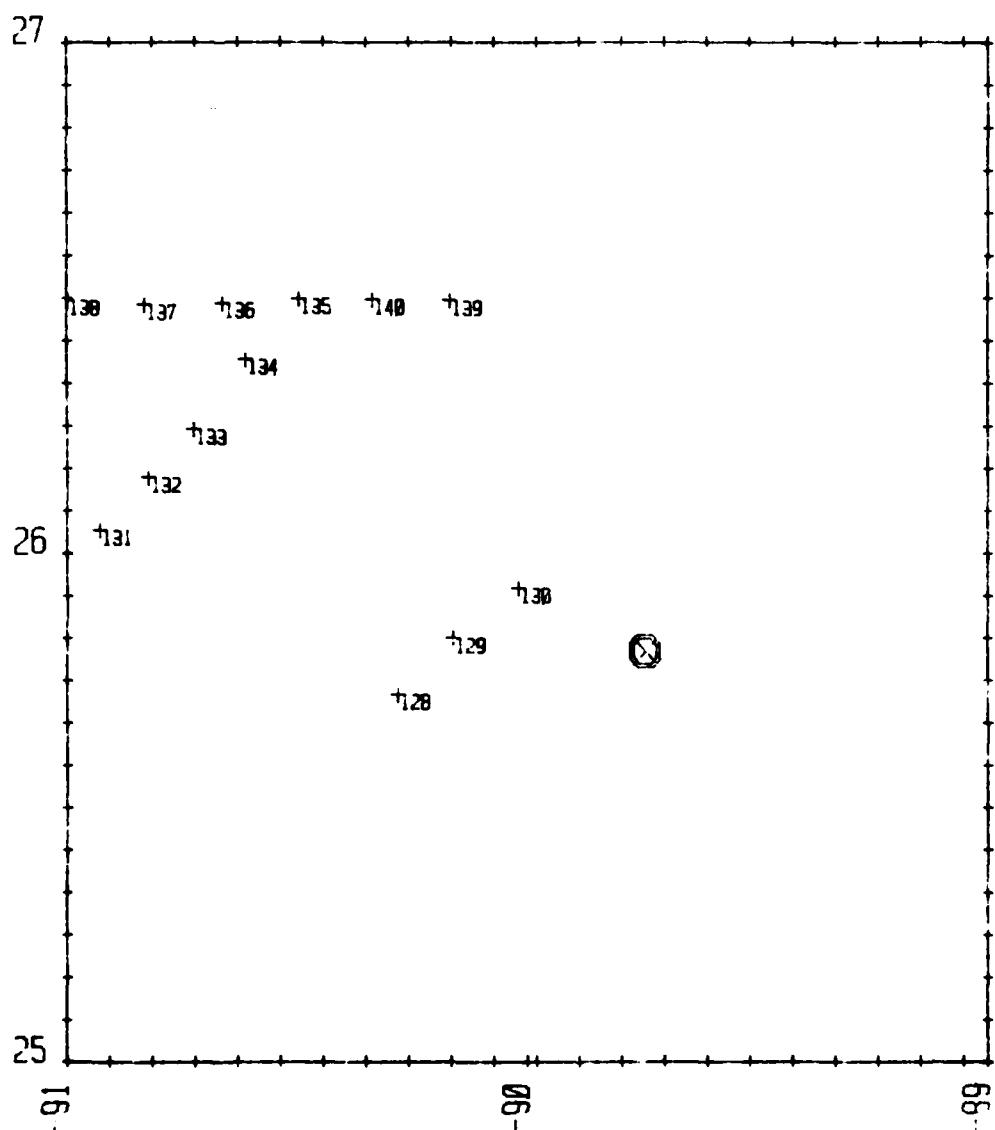


Figure 7.

ATOM '79 RECOVERY CRUISE

CTD POSITIONS, STATIONS 1-6

JANUARY 1980

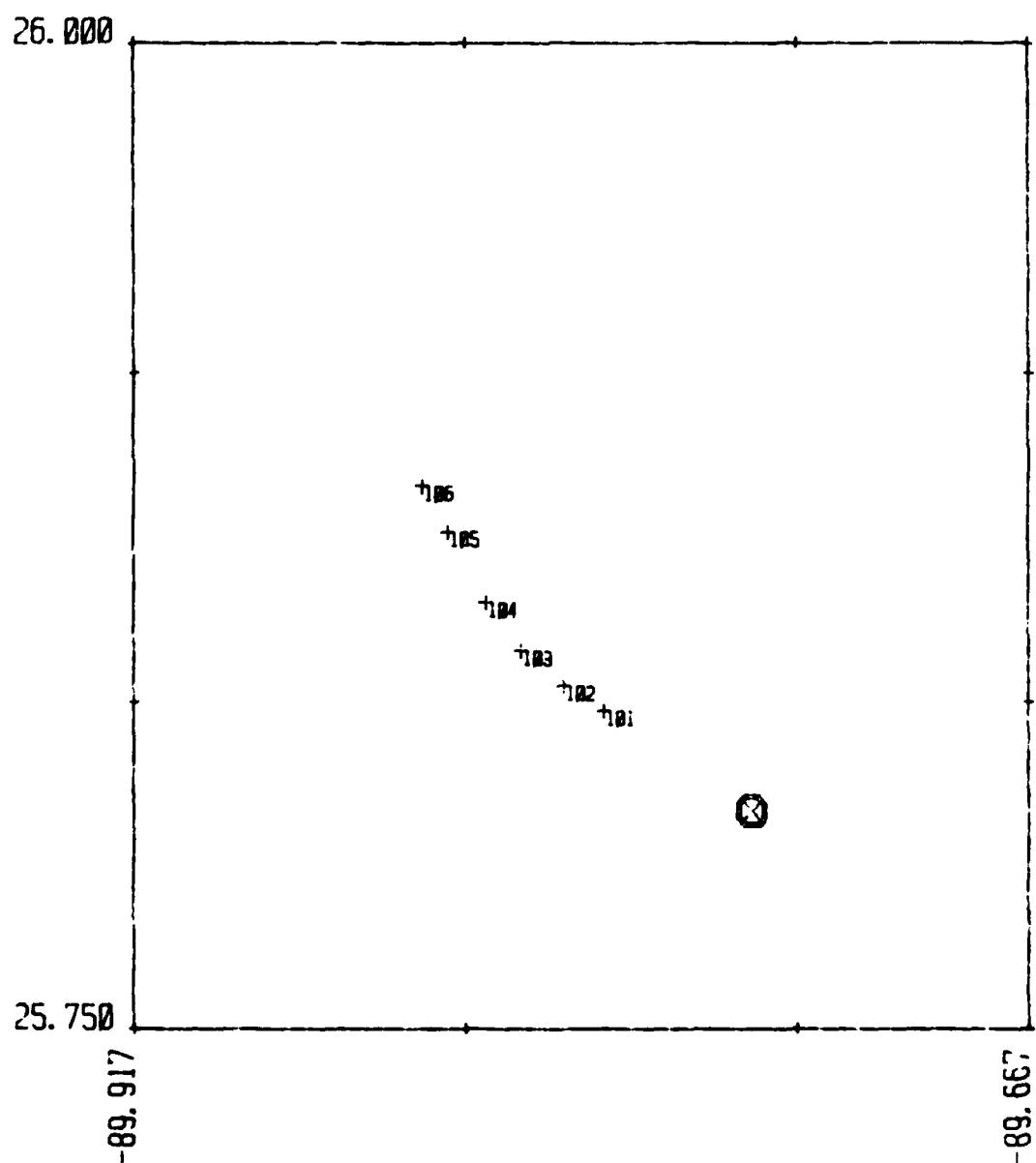


Figure 8.

ATOM '79 RECOVERY CRUISE

CTD POSITIONS, STATIONS 7-21

JANUARY, 1980

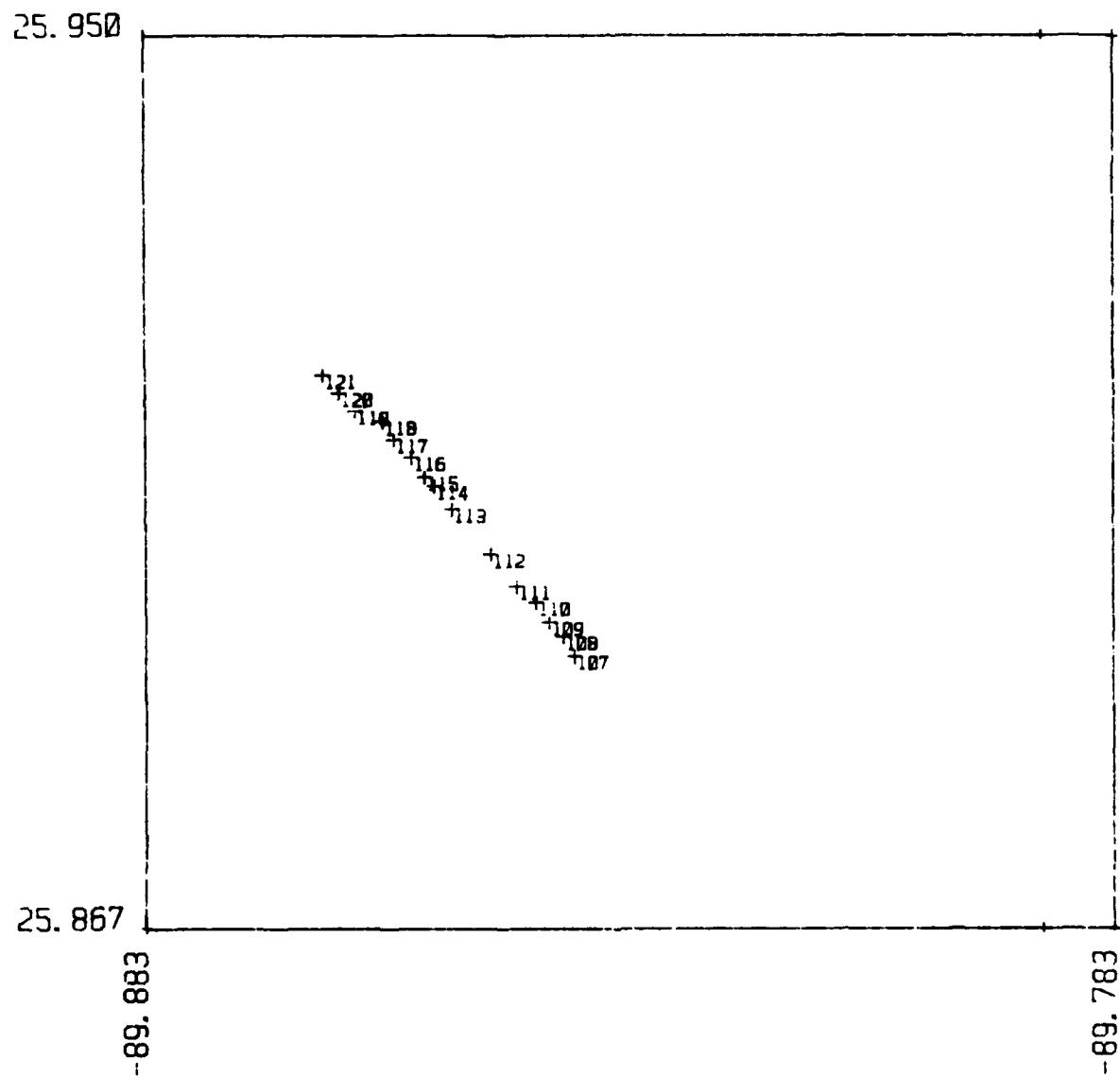


Figure 9.

ATOM '79 RECOVERY CRUISE

CTD POSITIONS-ALL STATIONS

JANUARY, 1980

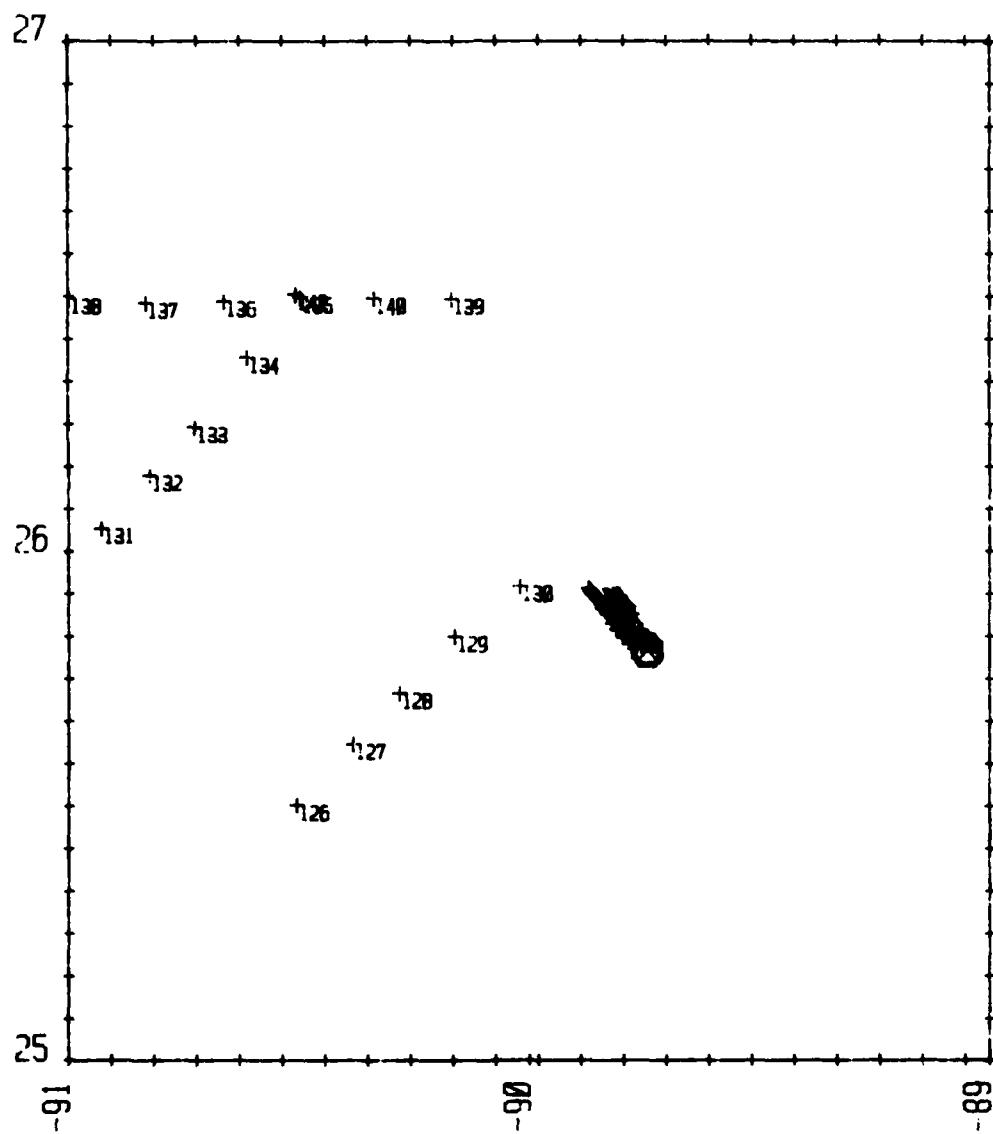


Figure 10.

ATOM '79 DEPLOYMENT CRUISE

SHEAR PROBE POSITIONS

December , 1979

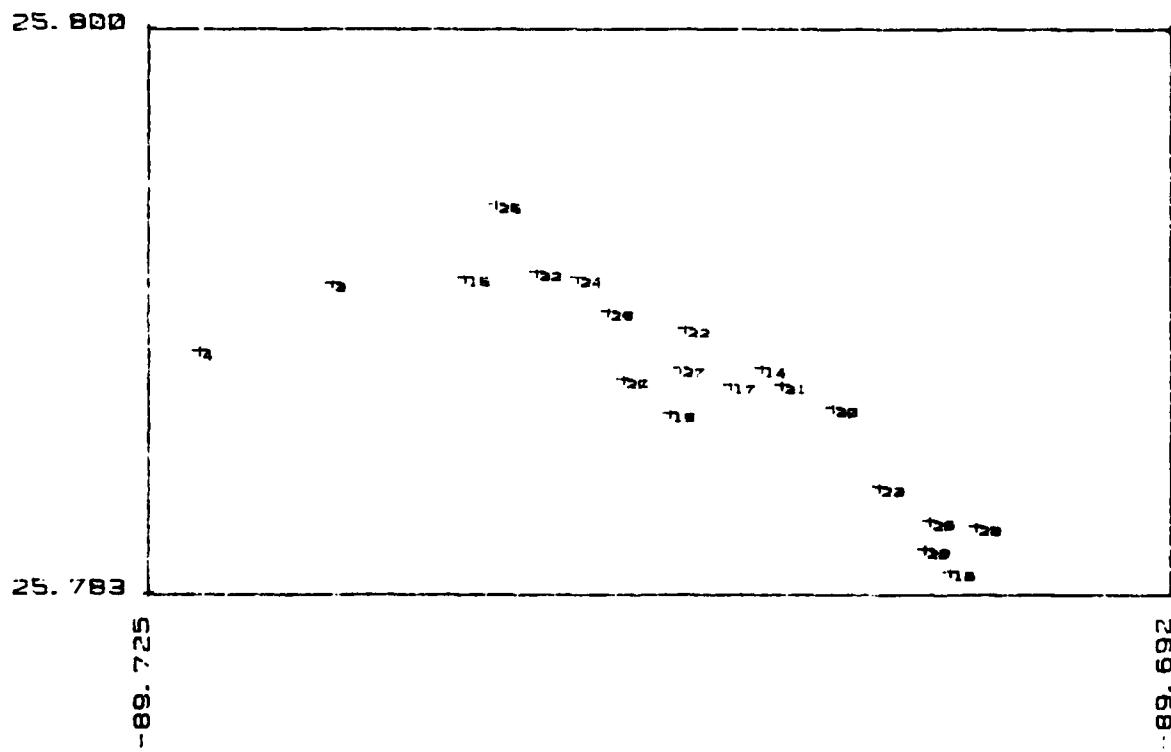


Figure 11.

ATOM '79 DEPLOYMENT CRUISE

SHEAR PROBE POSITIONS

DECEMBER, 1979

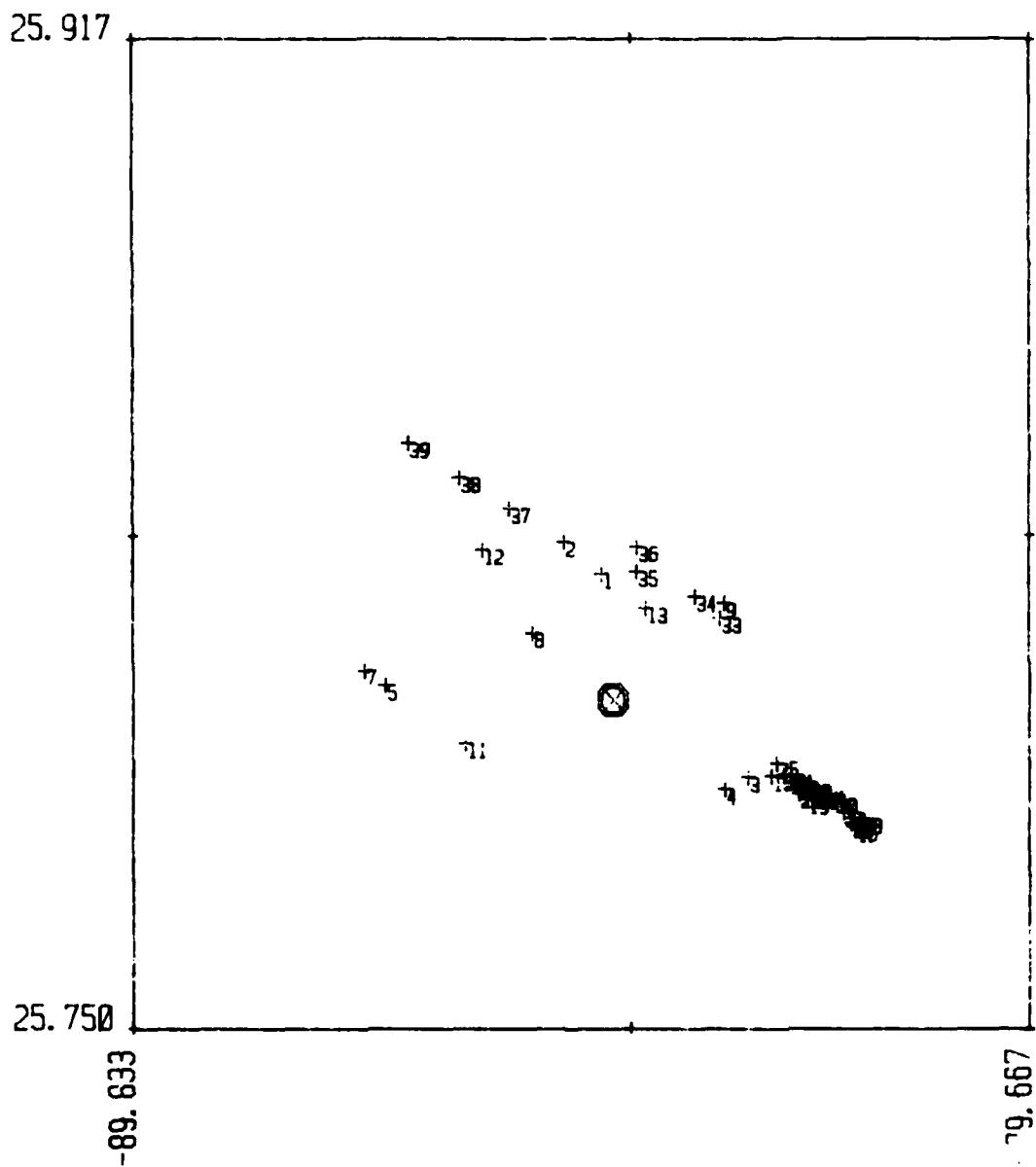


Figure 12.

ATOM '79 DEPLOYMENT CRUISE

SHEAR PROBE POSITIONS

DECEMBER, 1979

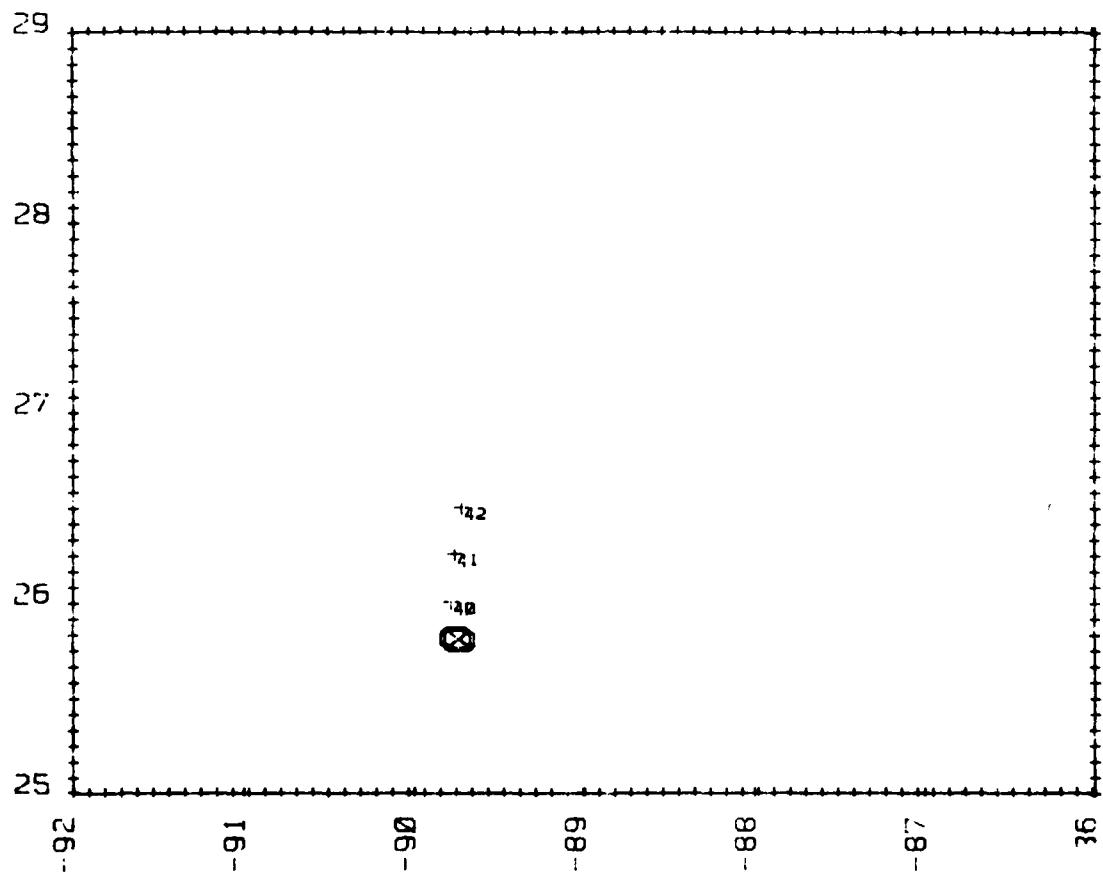


Figure 13.

3.0 CURRENT METER DATA (Figure 14)

FINAL CONFIGURATION FOR ATOM '79

(Acoustically Tracked Oceanographic Mooring)

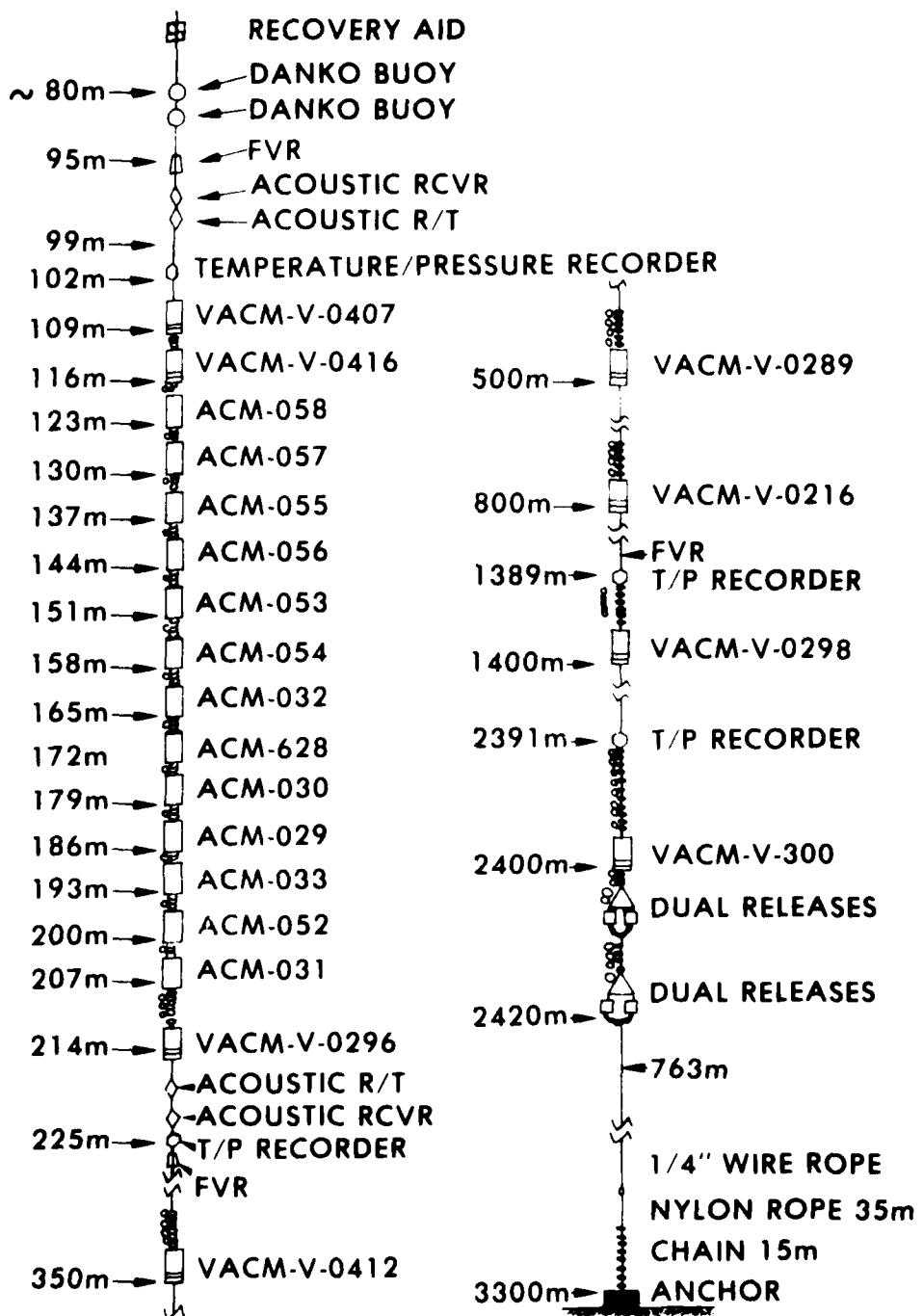


Figure 14.

- 3.1 Vector Averaging Current Meters
 - 3.1.1 Current Histograms and Statistics (Figures 15-29)
 - 3.1.2 Current Time Series (Figures 30-63)
 - 3.1.3 Temperature Time Series (Figures 64-70)
 - 3.1.4 Current Spectra (Figures 71-91)
 - 3.1.5 Temperature Spectra (Figures 92-98)

FILE: VACMF	AREA: A10070	LATITUDE: 25.226
METER: 30002	STABL:	LONGIT: -50.7442
DEPTH: 100	FNC:	
10-10		
11-20		
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1090-1100		
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3180-3190		
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4090-4100		
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4110-4120		
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4150-4160		
4160-4170		
4170-4180		
4180-4190		
4190-4200		
4200-4210		
4210-4220		
4220-4230		
4230-4240		
4240-42		

FILE: VACMF	ARRAY: ATCM70	SLANT:	LATITUDE: 25.216																			
METER: 000416		FNO:	LONGITUDE: -99.7442																			
DEPTH: 116																						
7-10																						
11-20																						
21-30																						
30-40																						
40-50																						
50-60																						
60-70																						
70-80																						
80-90																						
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270-280																						
280-290																						
290-300																						
300-310																						
310-320																						
320-330																						
330-340																						
340-350																						
350-360																						
SUM	0	5	12																			
PER CENT	0	0	0																			
NUMBER OF ZERO SPEEDS	1	0	0																			
TOTAL NUMBER OF OBS.	16000	0	0																			
AVERAGE SCALAR SPEED	51.19	CM/SEC	6.0																			
STD. DEVIATION	8.58	CM/SEC	5.2-9.4																			
VE R MEAN SPEED	48.92	CM/SEC	4.8-0.0																			
VEL. DIR. MEAN DIRECTION	298.80	DEGREES TRUE	122.43																			
		DIRECTION OF MAX SPEED	246.38 DEGREES TRUE																			
SPEED	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	
PERCENTAGE ZERO SPEEDS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
SUM	0	0	0	0	1.1	2.05	9.2	32.4	52.48	43.0	7.27	9.23	4.97	1.49	0	0	0	0	0	0	0	
MAXIMUM/MINIMUM U	51.19	CM/SEC	6.0	CM/SEC	-112.6	CM/SEC																
MAXIMUM/MINIMUM V	8.58	CM/SEC	5.2-9.4	CM/SEC	4.8-0.0	CM/SEC																
MAXIMUM SPEED	48.92	CM/SEC	4.8-0.0	CM/SEC	122.43	CM/SEC																

Figure 16.

FILE:	VACMF	ARRAY: A10H70	
MEASUREMENTS	DEPTHS:	FREQ:	LNGT/CLT:
	0- 10		1
	10- 20		0
	20- 30		0
	30- 40		0
	40- 50		0
	50- 60		1
	60- 70		0
	70- 80		0
	80- 90		0
	90- 100		0
	100- 110		0
	110- 120		0
	120- 130		0
	130- 140		0
	140- 150		0
	150- 160		0
	160- 170		0
	170- 180		0
	180- 190		0
	190- 200		0
	200- 210		0
	210- 220		0
	220- 230		0
	230- 240		0
	240- 250	10	0
	250- 260	10	0
	260- 270	10	0
	270- 280	10	0
	280- 290	10	0
	290- 300	10	0
	300- 310	10	0
	310- 320	10	0
	320- 330	10	0
	330- 340	10	0
	340- 350	10	0
	350- 360	10	0
SUM	1	0	0
Avg. CLT	0	0	0
NUMBER OF ZERO SPEEDS	0	0	0
Total Number of Obs.	3	3	3
AVERAGE SCALAR SPEED AND ANGULAR ACCELERATION	40.052 CM/SEC	0.052 CM/SEC	0.052 CM/SEC
TOP MEAN SPEED	36.39 CM/SEC	24.40 CM/SEC	22.60 CM/SEC
TOP MEAN DIRECTION	102.04 DEGREES TRUE	274.17 DEGREES	274.17 DEGREES
PERCENTAGE ZERO SPEEDS	0.0	0.0	0.0
MAXIMUM MINIMUM U	0.11 CM/SEC	-165.59 CM/SEC	-165.59 CM/SEC
MAXIMUM MINIMUM V	24.40 CM/SEC	22.60 CM/SEC	22.60 CM/SEC
MAXIMUM SPEED	274.17 CM/SEC	274.17 CM/SEC	274.17 CM/SEC
DIRECTION OF MAX SPEED	0.0 DEGREES TRUE	0.0 DEGREES TRUE	0.0 DEGREES TRUE

Figure 17.

FILE: VACMF
 REFER: 700442
 DEPTH: 357
 LATITUDE: 25.096
 LONGITUDE: -89.7442
 END:

DEG	MIN	SEC	DEG	MIN	SEC																
-10			0	0	0																
-9	20		0	0	0																
20	30		0	0	0																
-10	40		0	0	0																
40	50		0	0	0																
-9	60		0	0	0																
60	70		0	0	0																
-8	60		0	0	0																
60	90		0	0	0																
-70	100		0	0	0																
100	110		0	0	0																
-60	120		0	0	0																
120	130		0	0	0																
-50	140		0	0	0																
140	150		0	0	0																
-50	160		0	0	0																
160	170		0	0	0																
-40	180		0	0	0																
180	190		0	0	0																
-40	200		0	0	0																
200	210		0	0	0																
-30	220		0	0	0																
220	230		0	0	0																
-30	240		0	0	0																
240	250		0	0	0																
-20	260		0	0	0																
20	270		1	216	450																
-20	280		15	349	549																
20	290		22	217	436																
-20	300		56	233	624																
20	310		136	191	597																
-10	320		115	235	1049																
10	330		113	225	731																
-30	340		10	39	590																
30	350		8	51	44																
-30	360		8	51	34																
SPEED	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
SUM	0	0	30	1422	2574	6709	6386	3459	570	0	0	0	0	0	0	0	0	0	0	0	0
Avg. SPEED	0	0	30	474	858	2236	2122	1853	328	0	0	0	0	0	0	0	0	0	0	0	0
NUMBER OF ZEROS	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
AVERAGE SCALAR SPEED	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
STANDARD DEVIATION	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
VECTOR MEAN SPEED	29.91	CM/SEC	MAXIMUM/MINIMUM U	-4.88	CM/SEC	-41.24	CM/SEC	44.24	CM/SEC	36.90	CM/SEC	44.54	CM/SEC	32.46	CM/SEC	44.54	CM/SEC	32.46	CM/SEC	44.54	CM/SEC
FOR MEAN DIRECTION	296.61	DEGREES TRUE	DIRECTION OF MAX. SP.	324.60	DEGREES TRUE																
PERCENTAGE ZERO SPEEDS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure 18.

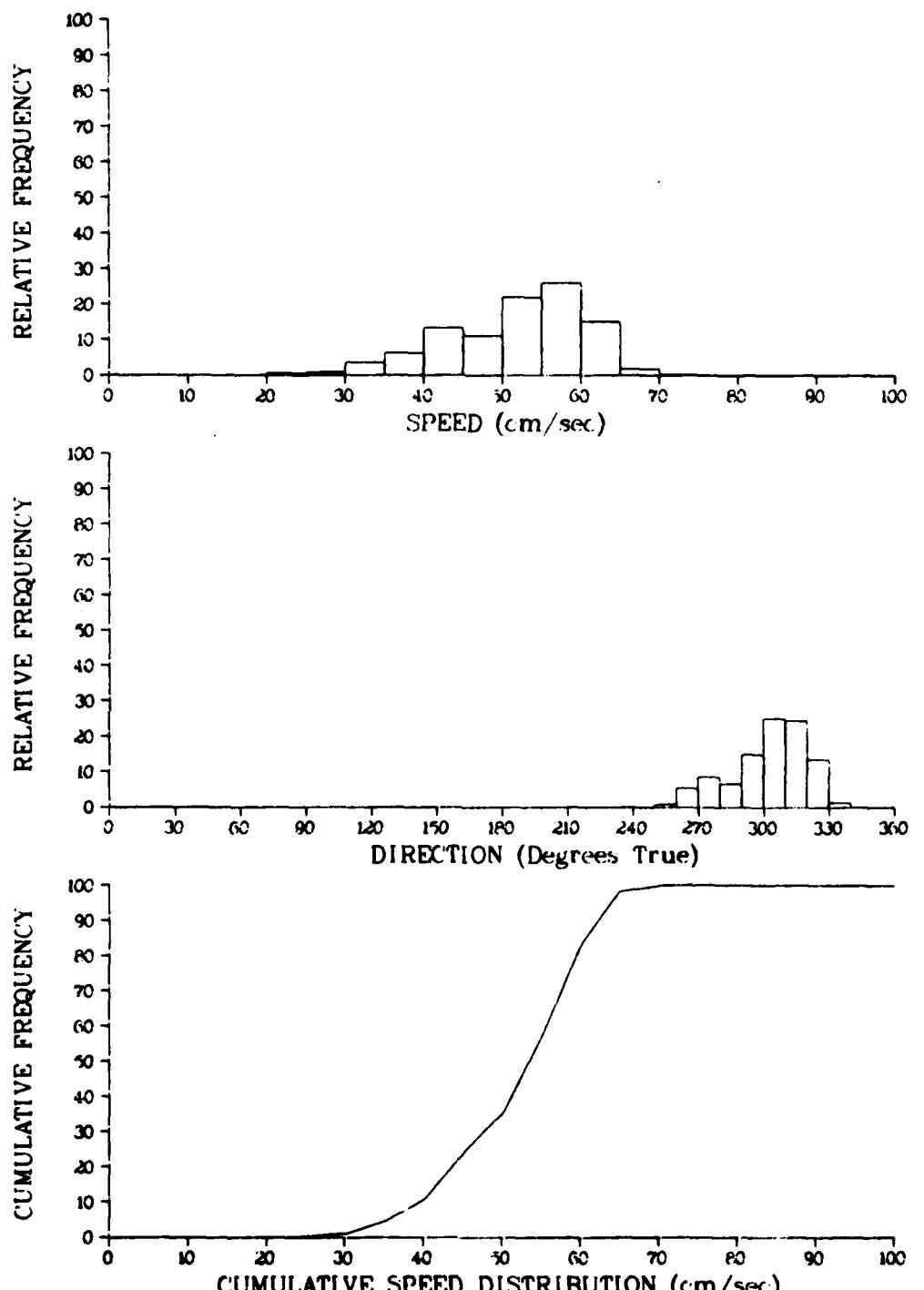
FILE: VAC1	ARRAY: ATOM79	DATE: 1979-05-05	TIME: 04:14:42	LATITUDE: -25.8886	LONGITUDE: -04.7442
DE FIM:	FNO:	500	5	0	0
-15	-15	0	0	0	0
-10	-20	0	0	0	0
-20	-30	0	0	0	0
-30	-40	0	0	0	0
-40	-50	0	0	0	0
-50	-60	0	0	0	0
-60	-70	0	0	0	0
-70	-80	0	0	0	0
-80	-90	0	0	0	0
-90	-100	0	0	0	0
-100	-110	0	0	0	0
-110	-120	0	0	0	0
-120	-130	0	0	0	0
-130	-140	0	0	0	0
-140	-150	0	0	0	0
-150	-160	0	0	0	0
-160	-170	0	0	0	0
-170	-180	0	0	0	0
-180	-190	0	0	0	0
-190	-200	0	0	0	0
-200	-210	0	0	0	0
-210	-220	0	0	0	0
-220	-230	0	0	0	0
-230	-240	0	0	0	0
-240	-250	0	0	0	0
-250	-260	0	0	0	0
-260	-270	0	0	0	0
-270	-280	0	0	0	0
-280	-290	0	0	0	0
-290	-300	0	0	0	0
-300	-310	0	0	0	0
-310	-320	0	0	0	0
-320	-330	0	0	0	0
-330	-340	0	0	0	0
-340	-350	0	0	0	0
-350	-360	0	0	0	0
-360	-370	0	0	0	0
-370	-380	0	0	0	0
-380	-390	0	0	0	0
-390	-400	0	0	0	0
-400	-410	0	0	0	0
-410	-420	0	0	0	0
-420	-430	0	0	0	0
-430	-440	0	0	0	0
-440	-450	0	0	0	0
-450	-460	0	0	0	0
-460	-470	0	0	0	0
-470	-480	0	0	0	0
-480	-490	0	0	0	0
-490	-500	0	0	0	0
0	1	0	0	0	0
1	2	0	0	0	0
2	3	0	0	0	0
3	4	0	0	0	0
4	5	0	0	0	0
5	6	0	0	0	0
6	7	0	0	0	0
7	8	0	0	0	0
8	9	0	0	0	0
9	10	0	0	0	0
10	11	0	0	0	0
11	12	0	0	0	0
12	13	0	0	0	0
13	14	0	0	0	0
14	15	0	0	0	0
15	16	0	0	0	0
16	17	0	0	0	0
17	18	0	0	0	0
18	19	0	0	0	0
19	20	0	0	0	0
20	21	0	0	0	0
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22	23	0	0	0	0
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24	25	0	0	0	0
25	26	0	0	0	0
26	27	0	0	0	0
27	28	0	0	0	0
28	29	0	0	0	0
29	30	0	0	0	0
30	31	0	0	0	0
31	32	0	0	0	0
32	33	0	0	0	0
33	34	0	0	0	0
34	35	0	0	0	0
35	36	0	0	0	0
36	37	0	0	0	0
37	38	0	0	0	0
38	39	0	0	0	0
39	40	0	0	0	0
40	41	0	0	0	0
41	42	0	0	0	0
42	43	0	0	0	0
43	44	0	0	0	0
44	45	0	0	0	0
45	46	0	0	0	0
46	47	0	0	0	0
47	48	0	0	0	0
48	49	0	0	0	0
49	50	0	0	0	0
50	51	0	0	0	0
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52	53	0	0	0	0
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60	61	0	0	0	0
61	62	0	0	0	0
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63	64	0	0	0	0
64	65	0	0	0	0
65	66	0	0	0	0
66	67	0	0	0	0
67	68	0	0	0	0
68	69	0	0	0	0
69	70	0	0	0	0
70	71	0	0	0	0
71	72	0	0	0	0
72	73	0	0	0	0
73	74	0	0	0	0
74	75	0	0	0	0
75	76	0	0	0	0
76	77	0	0	0	0
77	78	0	0	0	0
78	79	0	0	0	0
79	80	0	0	0	0
80	81	0	0	0	0
81	82	0	0	0	0
82	83	0	0	0	0
83	84	0	0	0	0
84	85	0	0	0	0
85	86	0	0	0	0
86	87	0	0	0	0
87	88	0	0	0	0
88	89	0	0	0	0
89	90	0	0	0	0
90	91	0	0	0	0
91	92	0	0	0	0
92	93	0	0	0	0
93	94	0	0	0	0
94	95	0	0	0	0
95	96	0	0	0	0
96	97	0	0	0	0
97	98	0	0	0	0
98	99	0	0	0	0
99	100	0	0	0	0
100	101	0	0	0	0
101	102	0	0	0	0
102	103	0	0	0	0
103	104	0	0	0	0
104	105	0	0	0	0
105	106	0	0	0	0
106	107	0	0	0	0
107	108	0	0	0	0
108	109	0	0	0	0
109	110	0	0	0	0
110	111	0	0	0	0
111	112	0	0	0	0
112	113	0	0	0	0
113	114	0	0	0	0
114	115	0	0	0	0
115	116	0	0	0	0
116	117	0	0	0	0
117	118	0	0	0	0
118	119	0	0	0	0
119	120	0	0	0	0
120	121	0	0	0	0
121	122	0	0	0	0
122	123	0	0	0	0
123	124	0	0	0	0
124	125	0	0	0	0
125	126	0	0	0	0
126	127	0	0	0	0
127	128	0	0	0	0
128	129	0	0	0	0
129	130	0	0	0	0
130	131	0	0	0	0
131	132	0	0	0	0
132	133	0	0	0	0
133	134	0	0	0	0
134	135	0	0	0	0
135	136	0	0	0	0
136	137	0	0	0	0
137	138	0	0	0	0
138	139	0	0	0	0
139	140	0	0	0	0
140	141	0	0	0	0
141	142	0	0	0	0
142	143	0	0	0	0
143	144	0	0	0	0
144	145	0	0	0	0
145	146	0	0	0	0
146	147	0	0	0	0
147	148	0	0	0	0
148	149	0	0	0	0
149	150	0	0	0	0
150	151	0	0	0	0
151	152	0	0	0	0
152	153	0	0	0	0
153	154	0	0	0	0
154	155	0	0	0	0
155	156	0	0	0	0
156	157	0	0	0	0
157	158	0	0	0	0
158	159	0	0	0	0
159	160	0	0	0	0
160	161	0	0	0	0
161	162	0	0	0	0
162	163	0	0	0	0
163	164	0	0	0	0
164	165	0	0	0	0
165	166	0	0	0	0
166	167	0	0	0	0
167	168	0	0	0	0
168	169	0	0	0	0
169	170	0	0	0	0
170	171	0	0	0	0
171	172	0	0	0	0
172	173	0	0	0	0
173	174	0	0	0	0
174	175	0	0	0	0
175	176	0	0	0	0
176	177	0	0	0	0
177	178	0	0	0	0
178	179	0	0	0	0
179	180	0	0	0	0
180	181	0	0	0	0
181	182	0	0	0	0
182	183	0	0	0	0
183	184	0	0	0	0
184	185	0	0	0	0
185	186	0	0	0	0
186	187	0	0	0	0
187	188	0	0	0	0
188	189	0	0	0	0
189	190	0	0	0	0
190	191	0	0	0	0
191	192	0	0	0	0
192	193	0	0	0	0
193	194	0	0	0	0
194	195	0	0	0	0
195	196	0	0	0	0
196	197	0	0	0	0
197	198	0	0	0	0
198	199	0	0	0	0
199	200	0	0	0	0
200	201	0	0	0	0
201	202	0	0	0	0
202	203	0	0	0	0
203	204	0	0	0	0
204	205	0	0	0	0
205	206	0	0	0	0
206	207	0	0	0	0
207	208	0	0	0	0
208	209	0	0	0	0
209	210	0	0	0	0
210	211	0	0	0	0
211	212	0	0	0	0
212	213	0	0	0	0
213	214	0	0	0	0
214	215	0	0	0	0
215	216	0	0	0	0
216	217	0	0	0	0
217	218	0	0	0	0
218	219	0	0	0	0
219	220	0	0	0	0
220	221	0	0	0	0
221	222	0	0	0	0
222	223	0	0	0	0
223	224	0	0	0	0
224	225	0	0	0	0
225	226	0	0		

Figure 19.

FILE: VACMF		ARRAY: ATOM19		LATITUDE: 21.00000		LONGITUDE: -65.7442	
NEEDS-0 240290		STAK-0					
DEPTH: 14.39		END:					
3- 10	4	118				122	0.6
10- 20	443	141				264	1.3
20- 30	442	67				529	2.8
30- 40	35	207				422	2.2
40- 50	1	317				319	1.7
50- 60	46					46	2
60- 70		339	24				
70- 80		263	26				
80- 90		216	67				
90-100		129	172				
100-110		86	354				
110-120		122	227				
120-130		73	220				
130-140		18	30				
140-150		175	121				
150-160		59	171				
160-170		55	215	251	3C		
170-180		13	323	344	336		
180-190		117	313	53	46.8		
190-200		23	489	5	14.5		
200-210		278	192	714	948		
210-220		38	394	228	171		
220-230		16	247	42			
230-240		31	94				
240-250		10	205				
250-260		42	90				
260-270		4	232	198			
270-280		6	94	121			
280-290		16	77				
290-300		40	56				
300-310		238	67	28			
310-320		28	242	146			
320-330		7	284	222			
330-340		20	49	192	459		
340-350	1	378	910	591	851	194	
350-360	7	608	281	33			
SPEED	0	5	13	20	25	30	0.6
SUM	36	3110	4906	2734	3525	2532	1504
PER-CI	-2	112	25.9	14.2	18.4	13.2	7.8
NUMBER OF ZERO SPEEDS	0	0	0	0	0	0	0
TOTAL NUMBER OF SPEEDS	9200						
AVERAGE SCALAR SPEED	18.38	CM/SEC					
BAND DEVIATION	0.22	CM/SEC					
VECTOR MEAN SPEED	4.17	CM/SEC					
VECTOR MEAN DIRECTION	276.43	Degrees True					
PERCENTAGE ZERO SPEEDS	0.0						
MAXIMUM/MINIMUM U	12.15	CM/SEC	-15.82	CM/SEC			
MAXIMUM/MINIMUM V	35.43	CM/SEC	34.66	CM/SEC			
MAXIMUM SPEED	37.65	CM/SEC					
DIRECTION OF MAX SPEED	330.73	Degrees True					

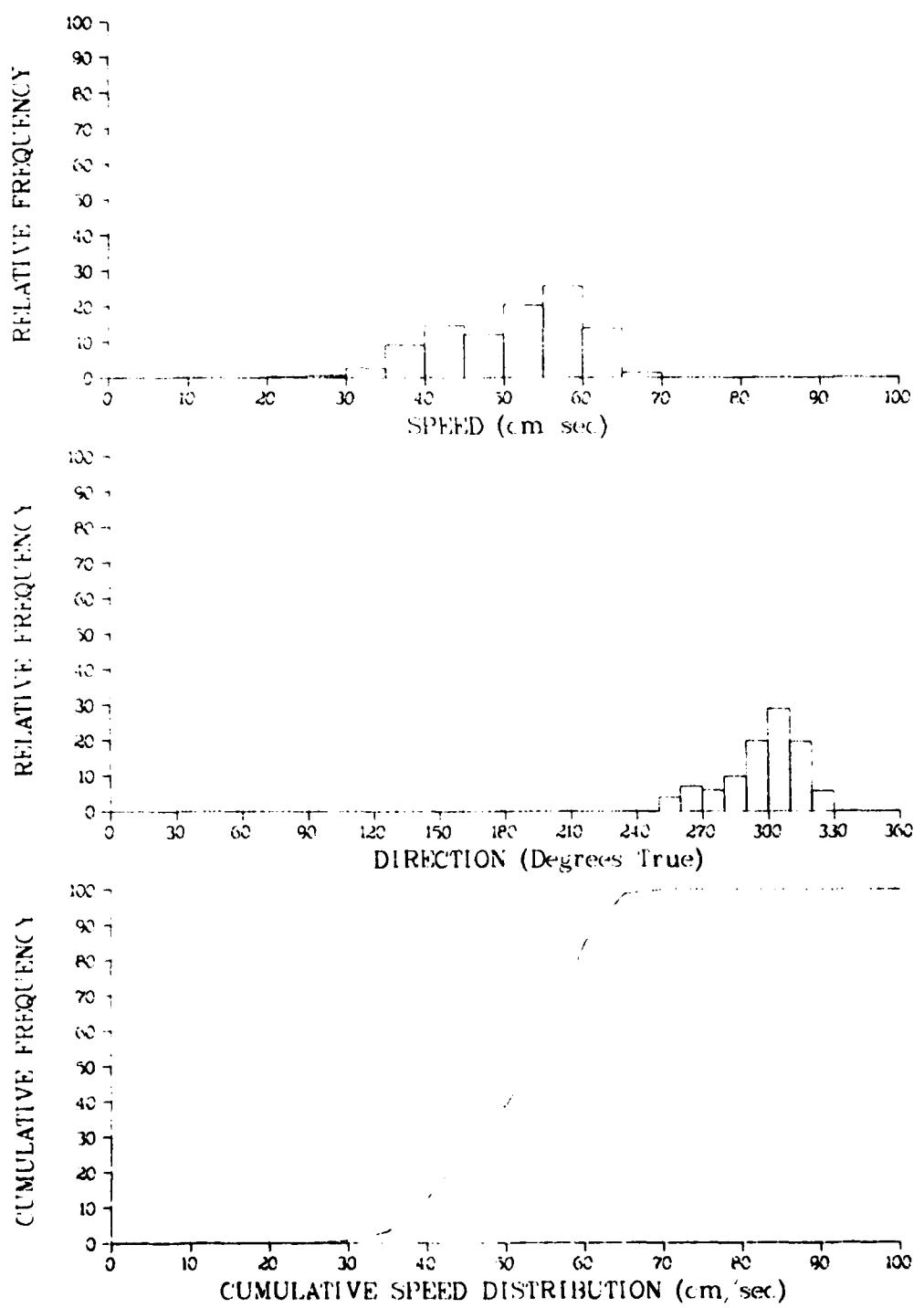
Figure 20.

Figure 21.



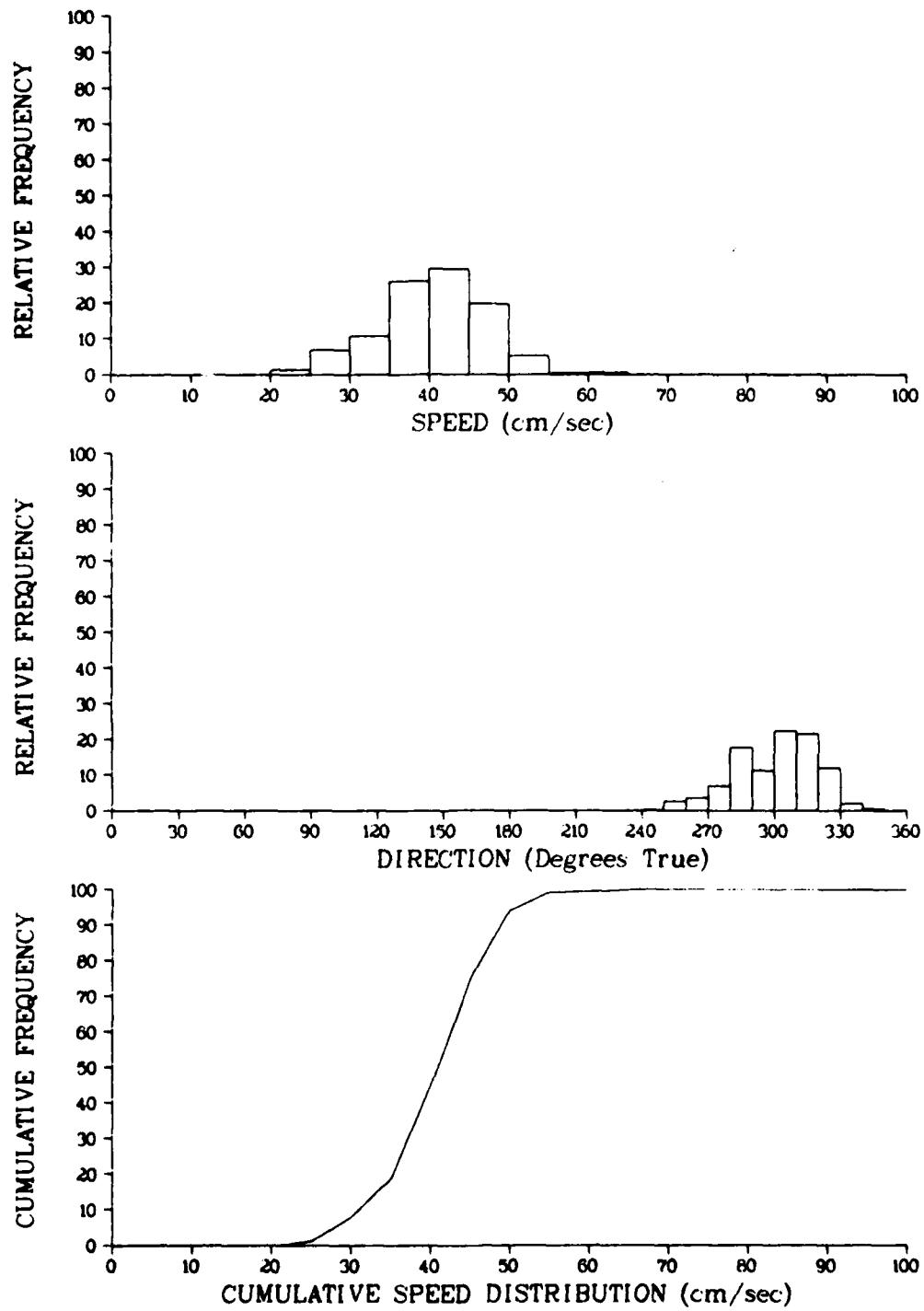
File	VACMF	Array	ATOM79
Meter	000407	Depth	100
Latitude	25 806	Start	
Longitude	-89 7142	End	

Figure 22.



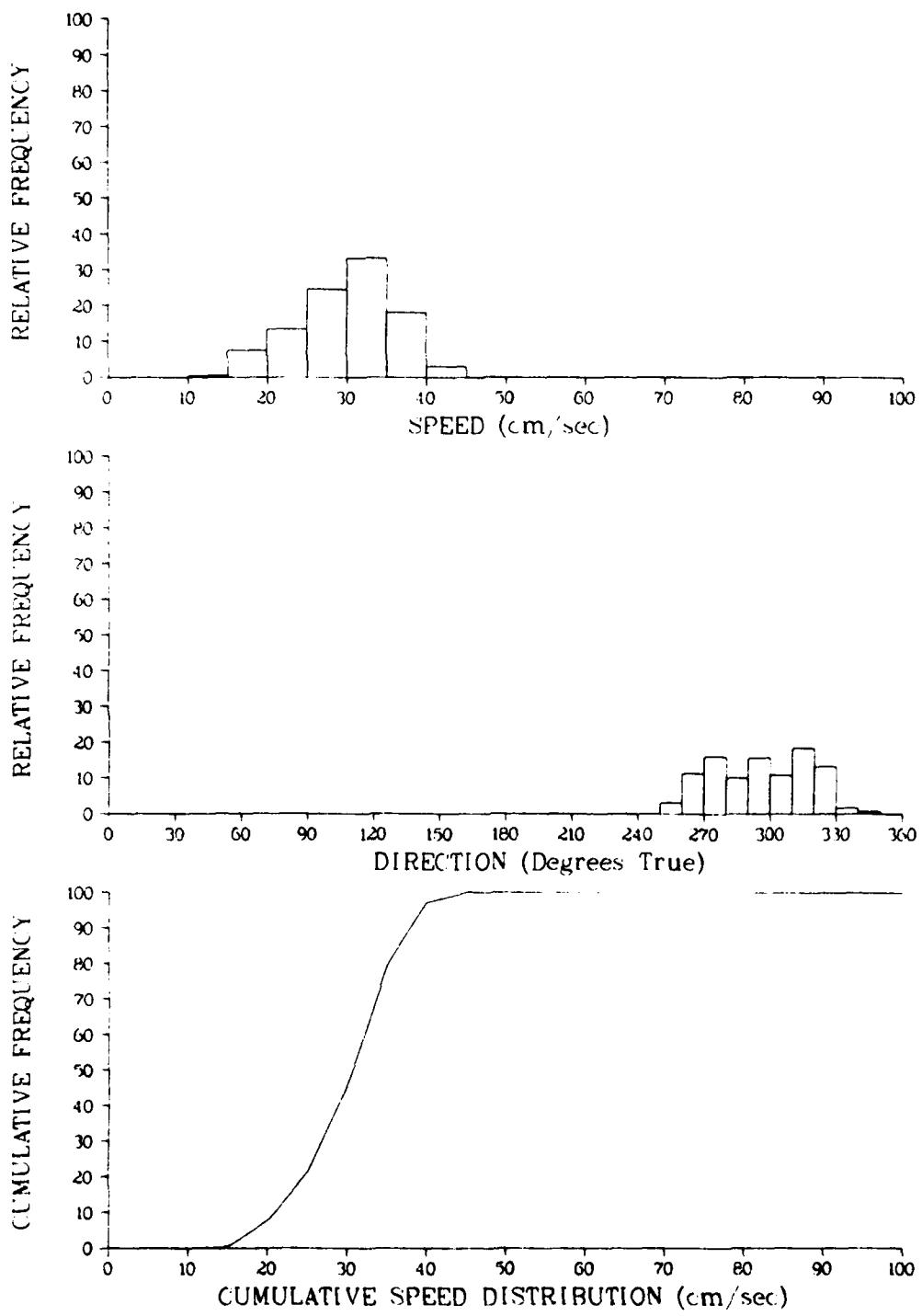
File VACMF
 Meter 000416
 Latitude 25 806
 Longitude -89 742
 Array ATOM79
 Depth 116
 Start
 End

Figure 23.



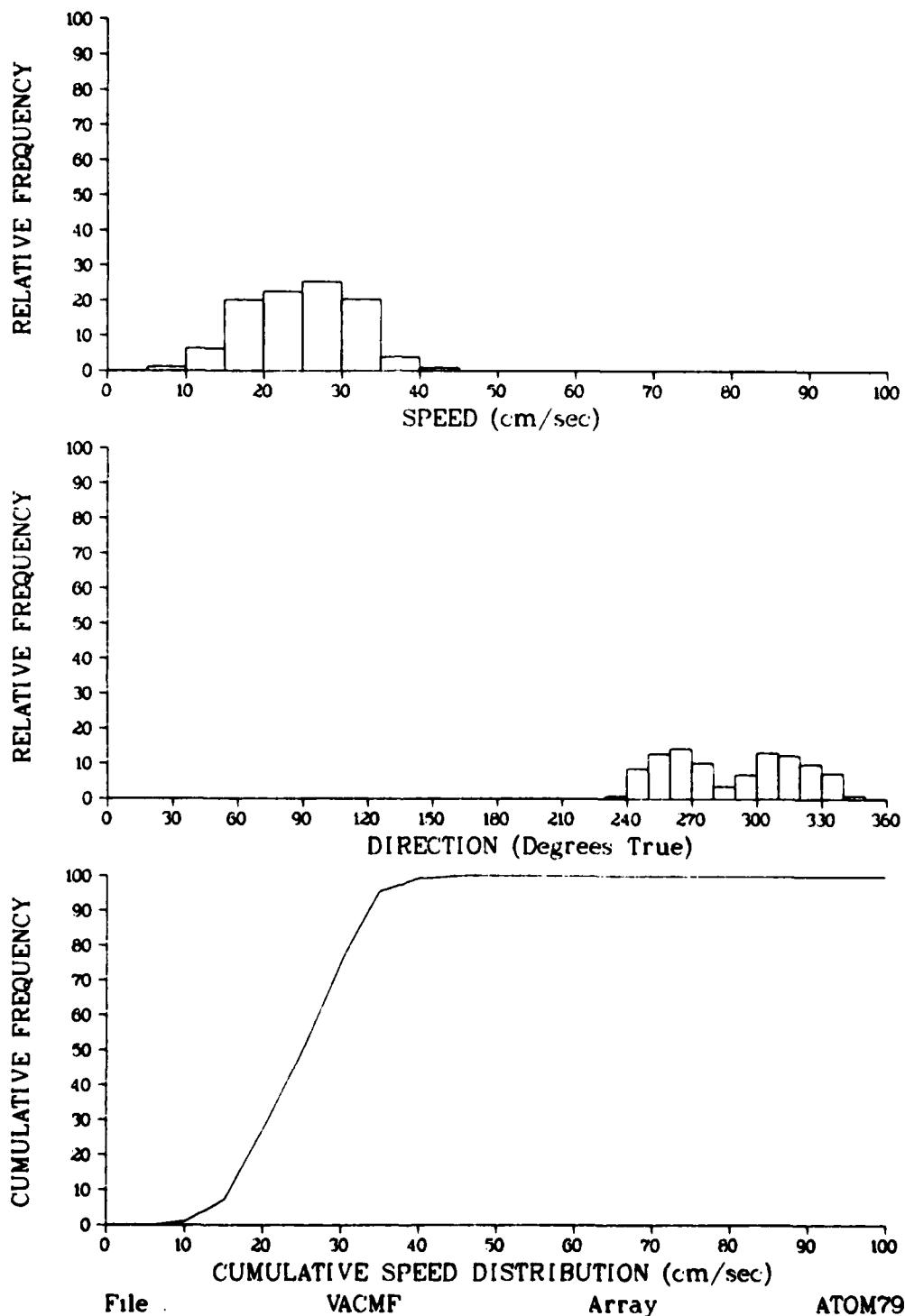
File : VACMF
 Meter 000296
 Latitude 25.806
 Longitude -89.742
 Array ATOM79
 Depth 214
 Start
 End

Figure 24.



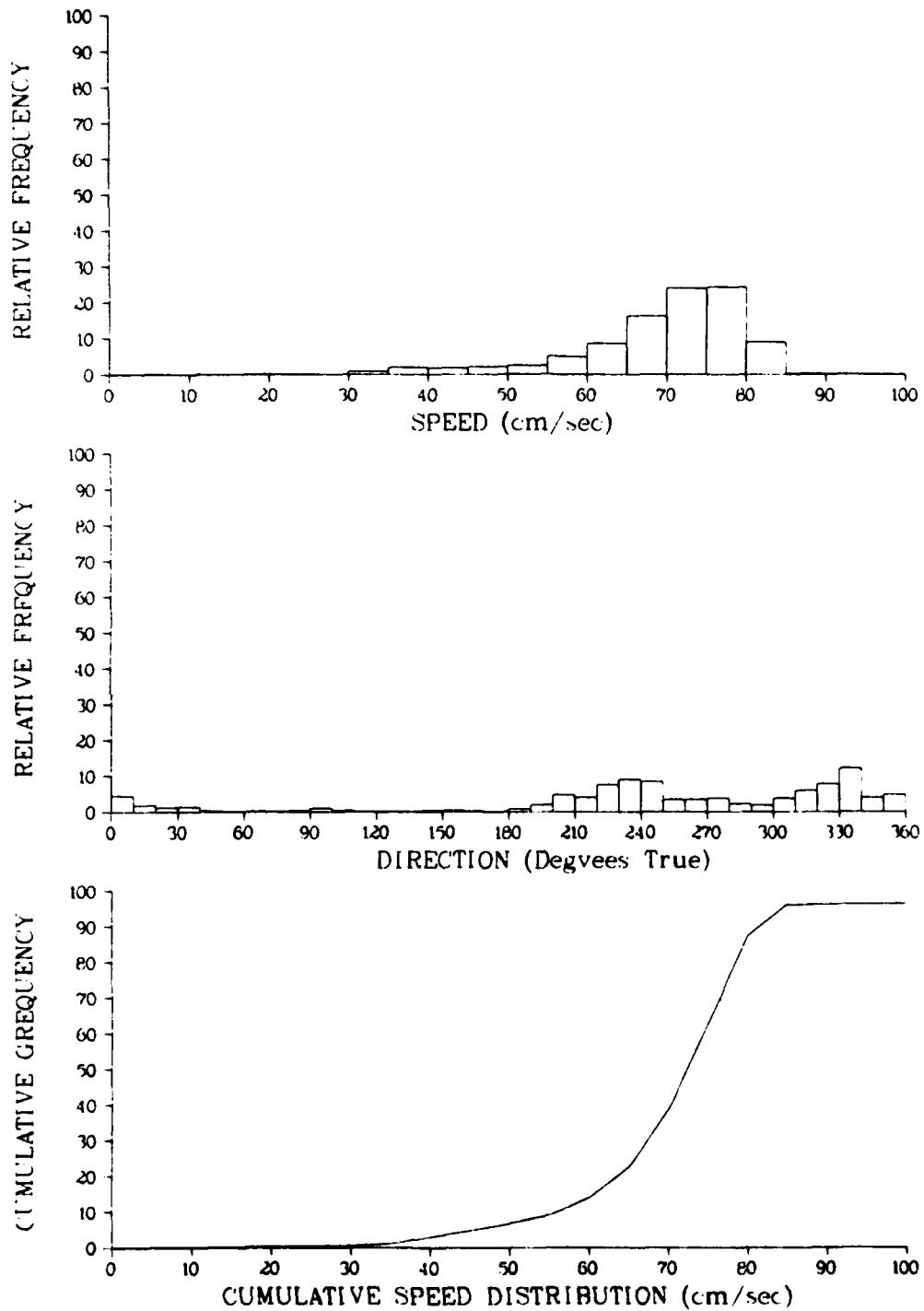
File	VACMF	Array	ATOM79
Meter	000412	Depth	350
Latitude	25 806	Start	
Longitude	-89 7442	End	

Figure 25.



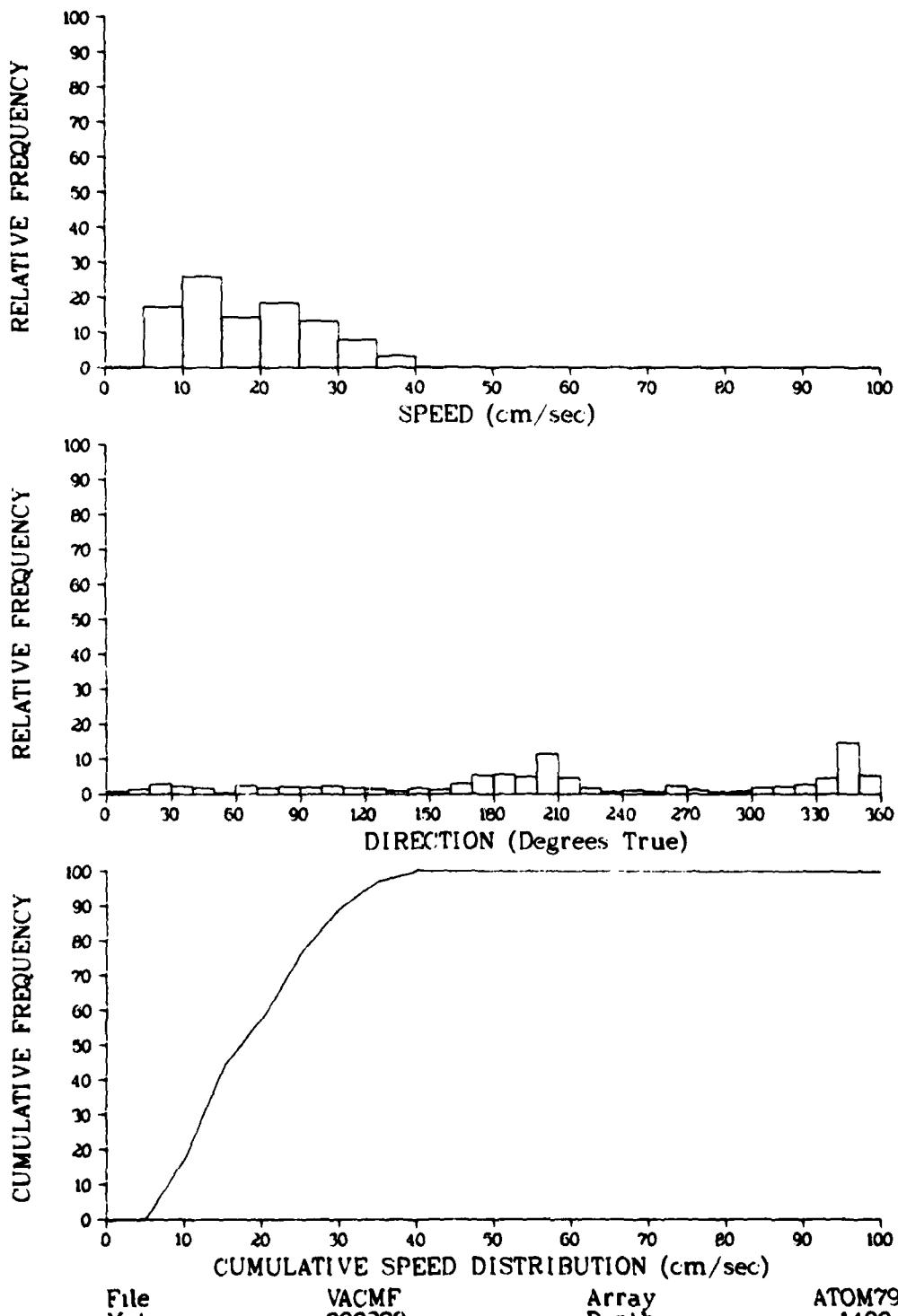
File VACMF
 Meter 000289
 Latitude 25 806
 Longitude -89 742
 Array ATOM79
 Depth 500
 Start
 End

Figure 26.



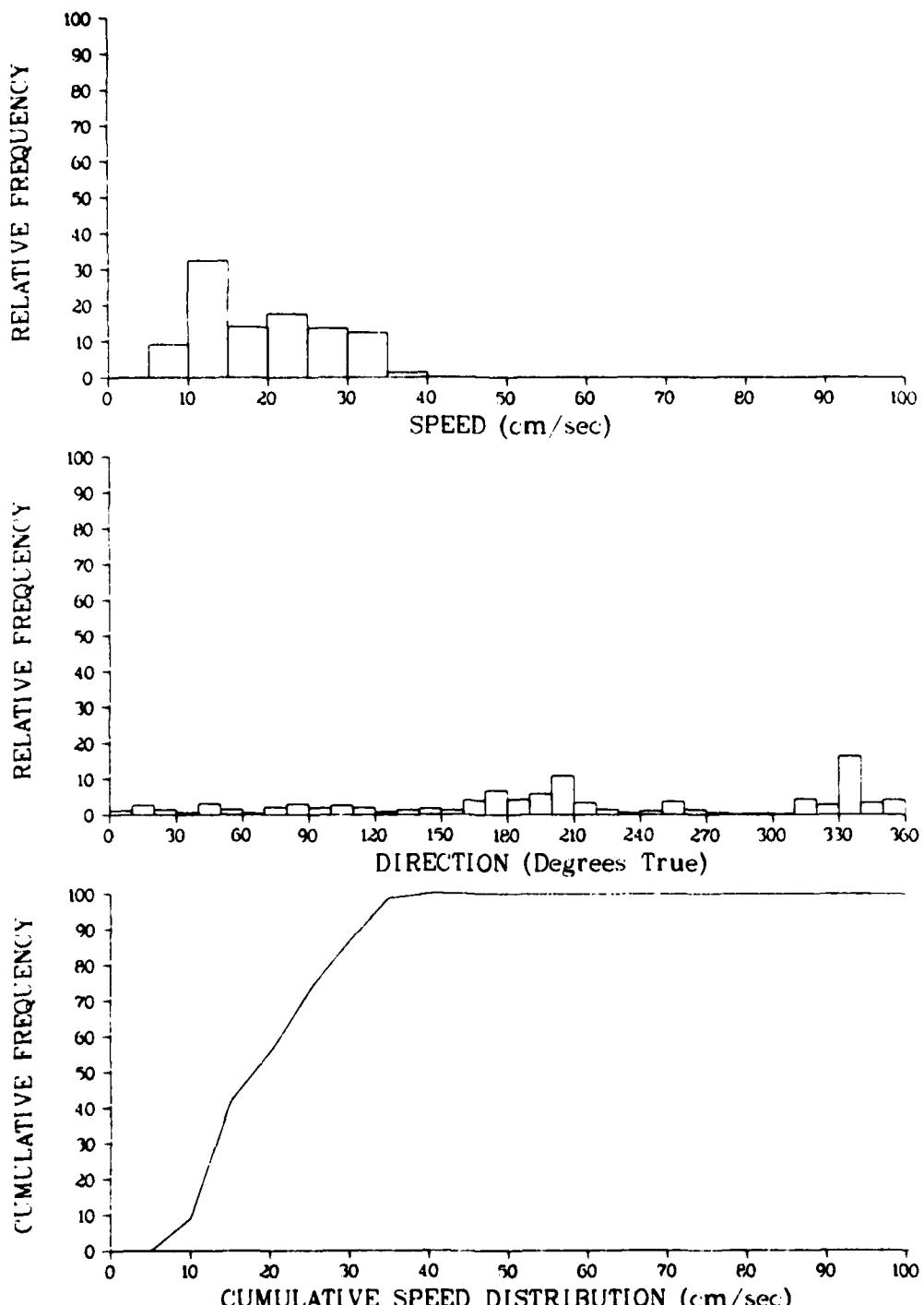
File	VACMF	Array	ATOM79
Metet	000217	Depth	800
Latitude	25 806	Start	
Longitude	-89 742	End	a

Figure 27.



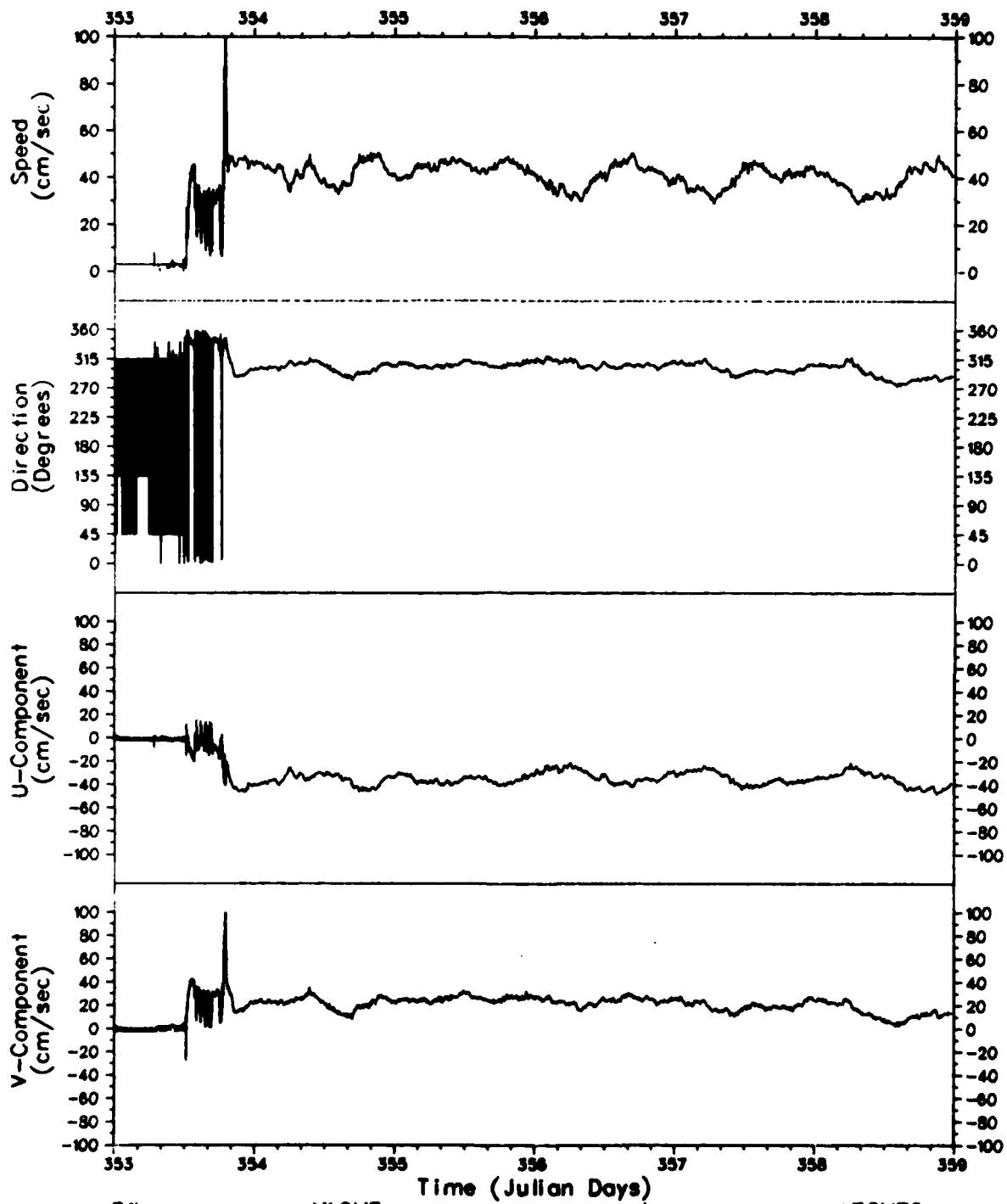
File Meter	VACMF 000298	Array Depth	ATOM79
Latitude 25 806		Start	
Longitude -89 7442		End	1400

Figure 28.



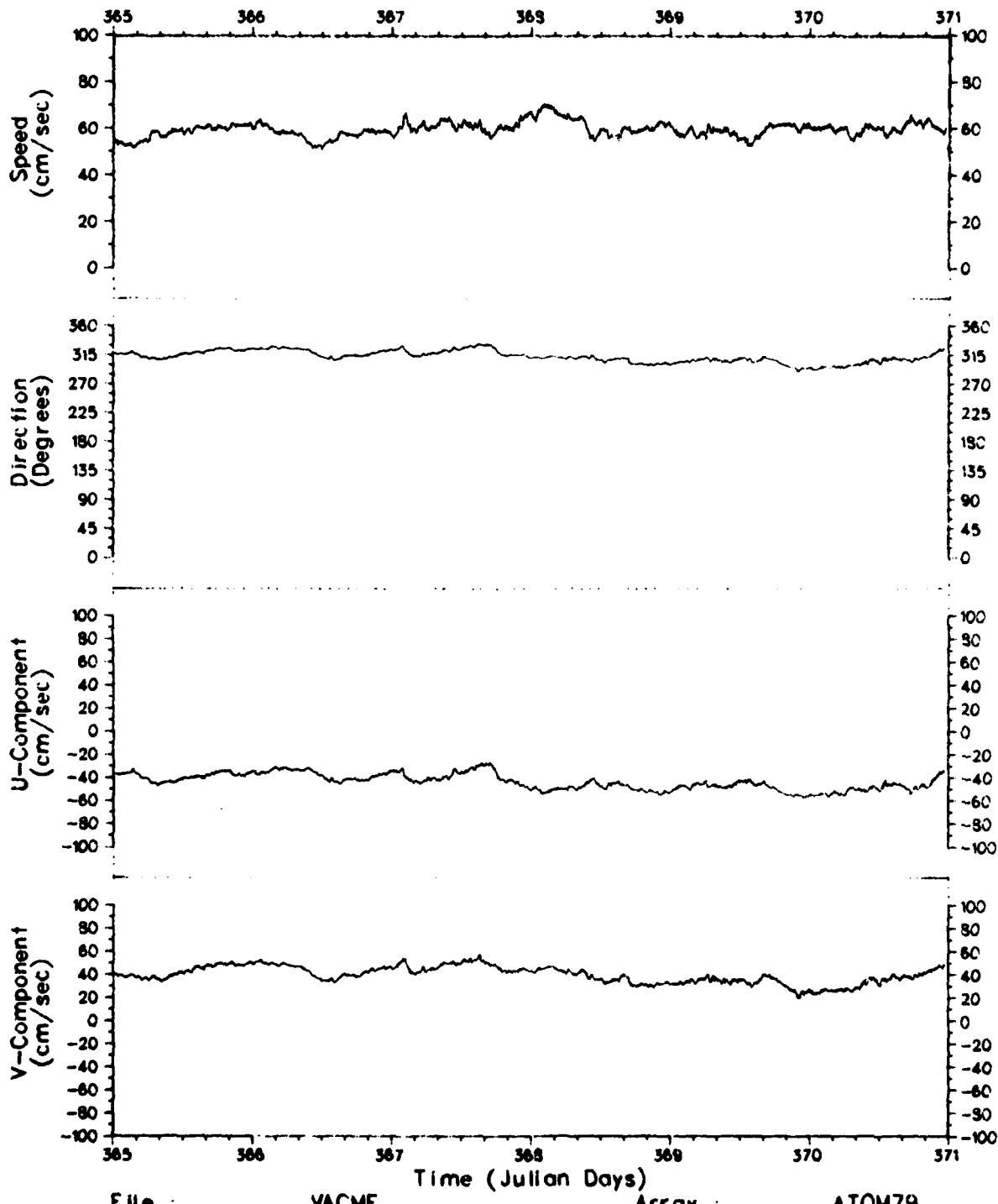
File	VACMF	Array	ATOM79
Meter	000300	Depth	2400
Latitude	25 806	Start	
Longitude	-89 7442	End	

Figure 29.



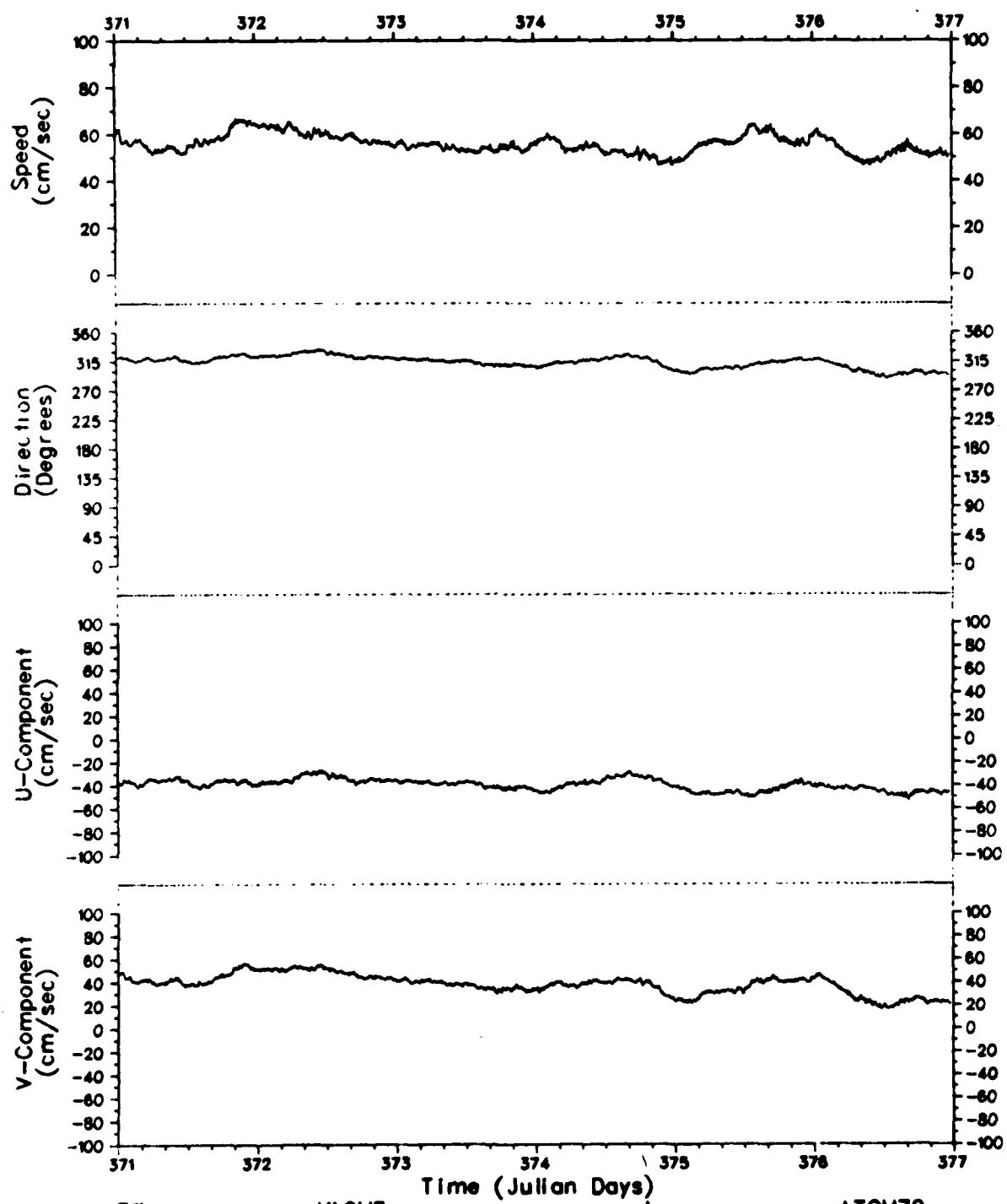
File :	VACMF	Array :	ATOM79
Meter :	000407	Depth :	100
Latitude :	25.806	Start :	19 DEC 1979
Longitude :	-89.7442	End :	14 JAN 1980

Figure 30.



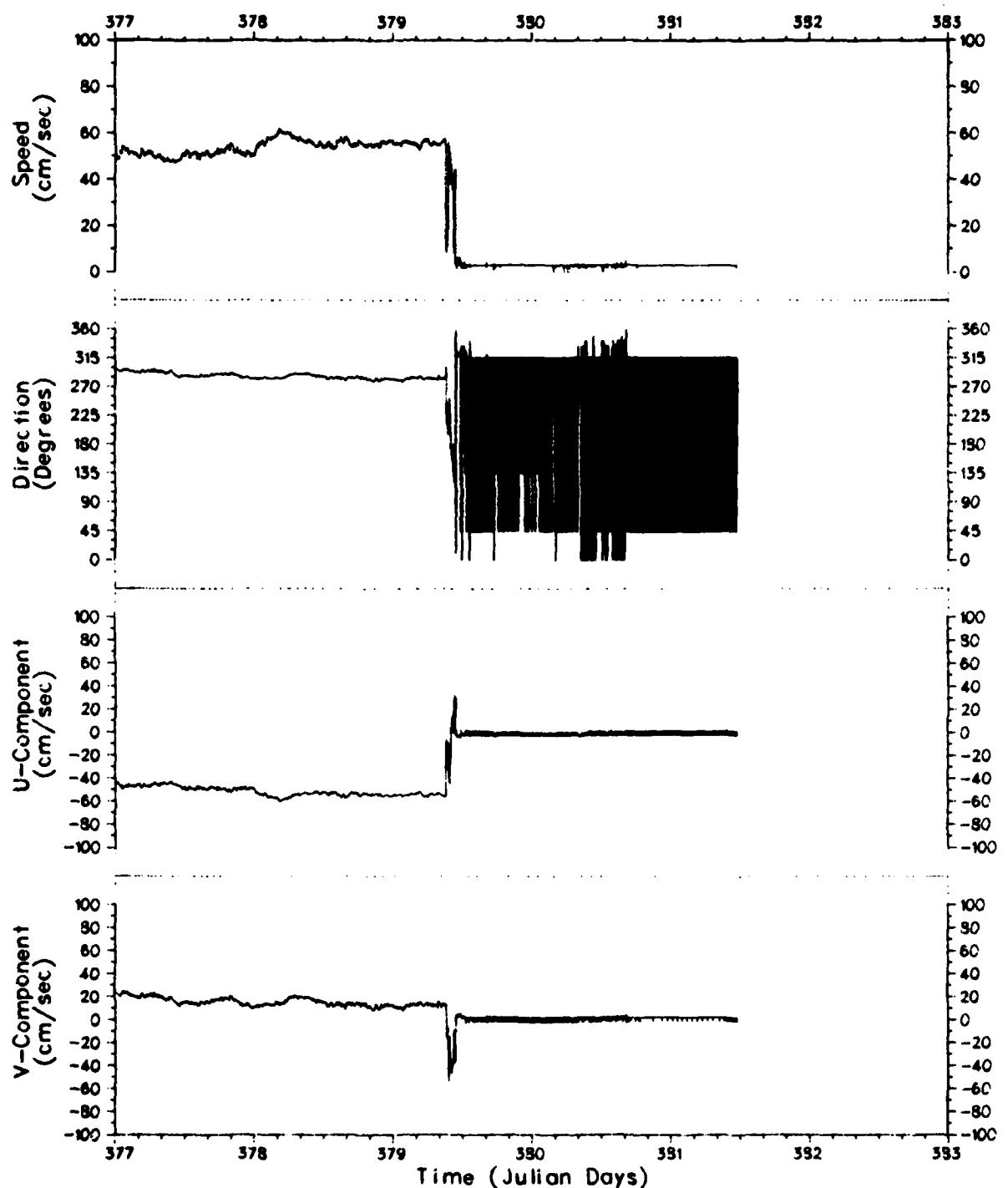
File :	VACMF	Array :	ATOM79
Meter :	000407	Depth :	100
Latitude :	25.806	Start :	19 DEC 1979
Longitude :	-89.7442	End :	14 JAN 1980

Figure 31.



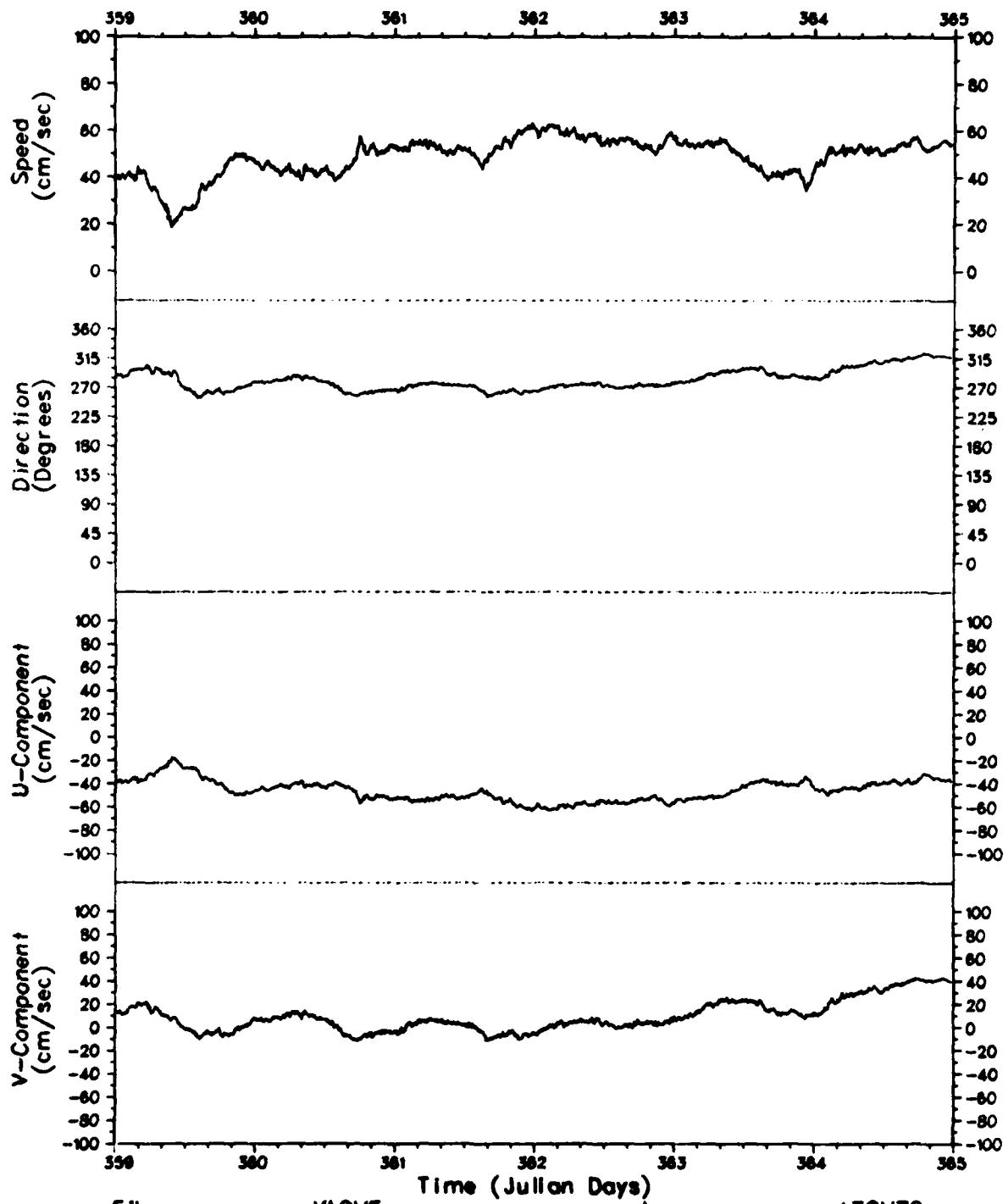
File :	VACMF	Array :	ATOM79
Meter :	000407	Depth :	100
Latitude :	25.806	Start :	19 DEC 1979
Longitude :	-89.7442	End :	14 JAN 1980

Figure 32.



File : VACMF
 Meter : 000407
 Latitude : 25.806
 Longitude : -89.7442
 Array : ATOM79
 Depth : 100
 Start : 19 DEC 1979
 End : 14 JAN 1980

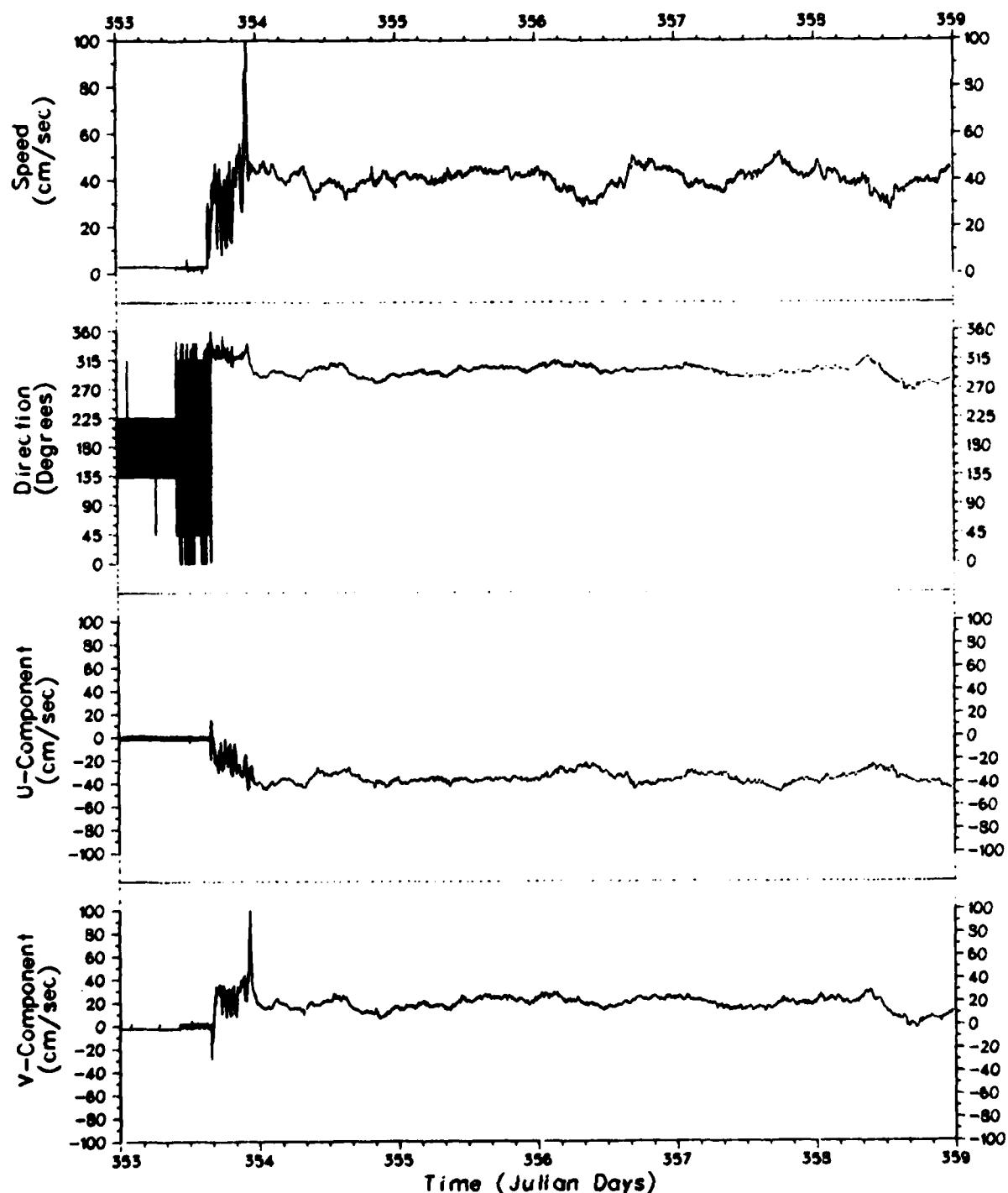
Figure 33.



File : VACMF
 Meter : 000407
 Latitude : 25.806
 Longitude : -89.7442

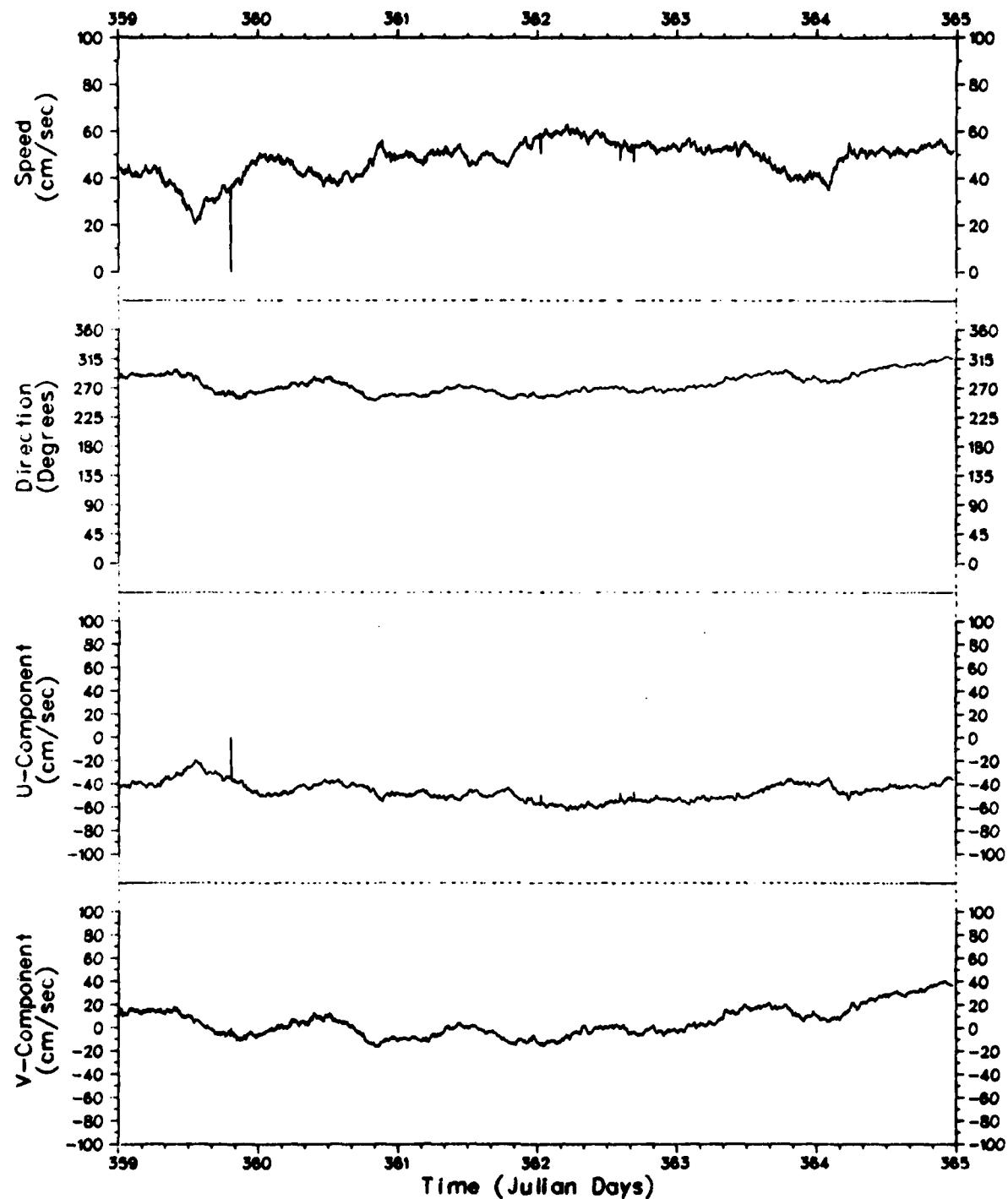
Array : ATOM79
 Depth : 100
 Start : 19 DEC 1979
 End : 14 JAN 1980

Figure 34.



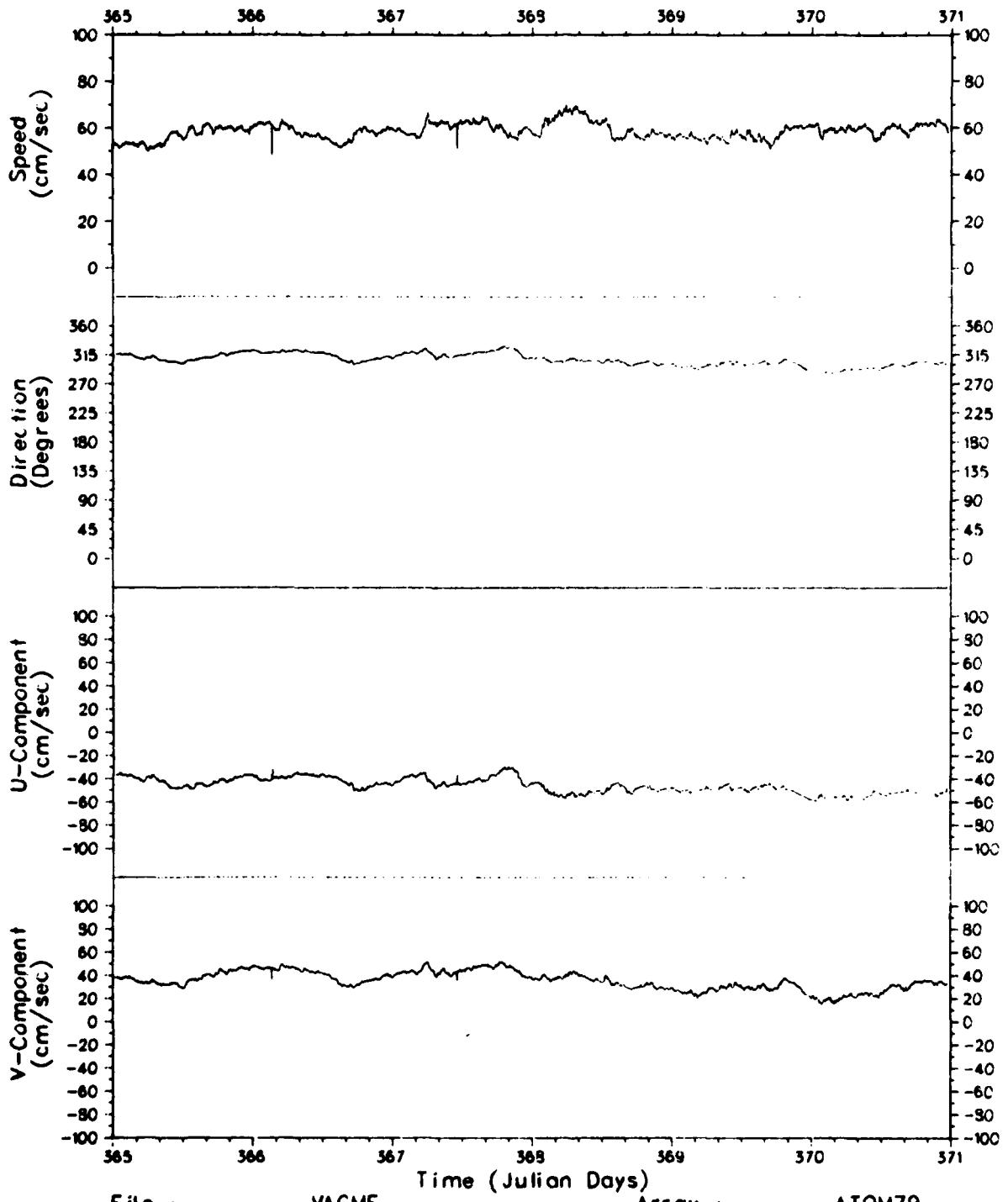
File : VACMF
 Meter : 000416
 Latitude : 25.806
 Longitude : -89.7442
 Array : ATOM79
 Depth : 116
 Start : 19 DEC 1979
 End : 14 JAN 1980

Figure 35.



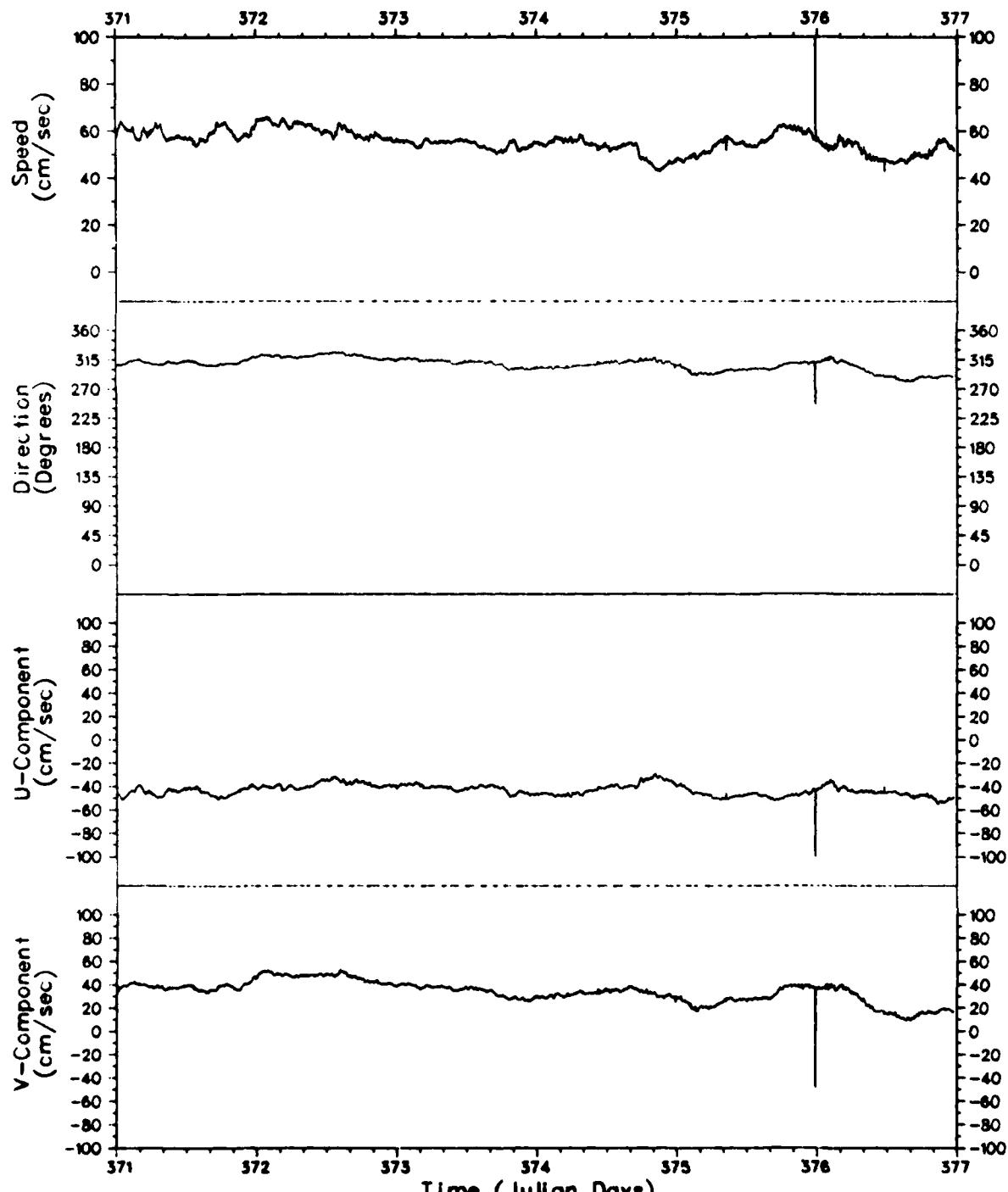
File : VACMF
 Meter : 000416
 Latitude : 25.806
 Longitude : -89.7442
 Array : ATOM79
 Depth : 116
 Start : 19 DEC 1979
 End : 14 JAN 1980

Figure 36.



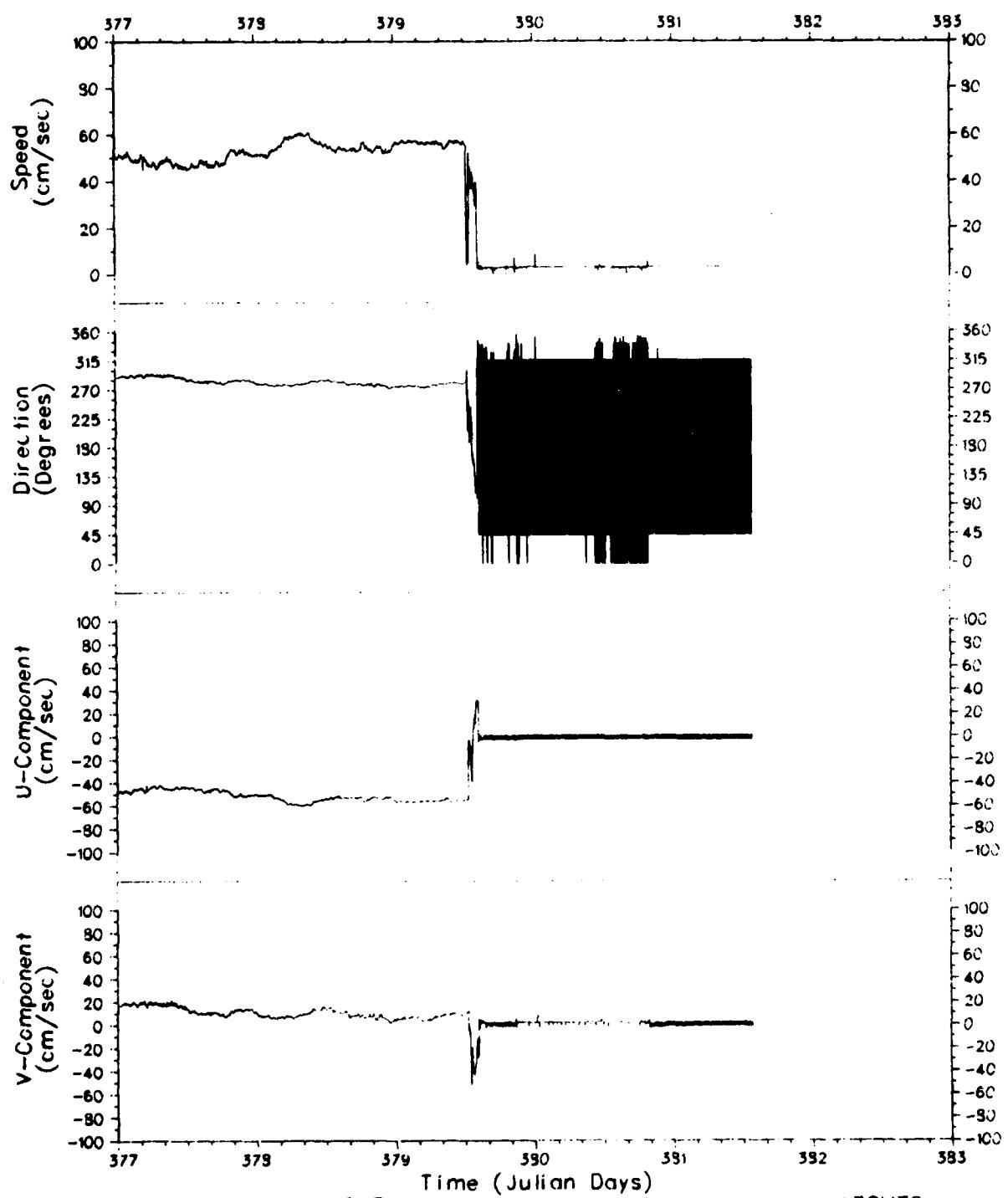
File : VACMF
 Meter : 000416
 Latitude : 25.806
 Longitude : -89.7442
 Array : ATOM79
 Depth : 116
 Start : 19 DEC 1979
 End : 14 JAN 1980

Figure 37.



File : VACMF Array : ATOM79
 Meter : 000416 Depth : 116
 Latitude : 25.806 Start : 19 DEC 1979
 Longitude : -89.7442 End : 14 JAN 1980

Figure 38.



File :	VACMF	Array	ATOM79
Meter :	000416	Depth	116
Latitude :	25.806	Start	19 DEC 1979
Longitude :	-89.7442	End	14 JAN 1980

Figure 39.

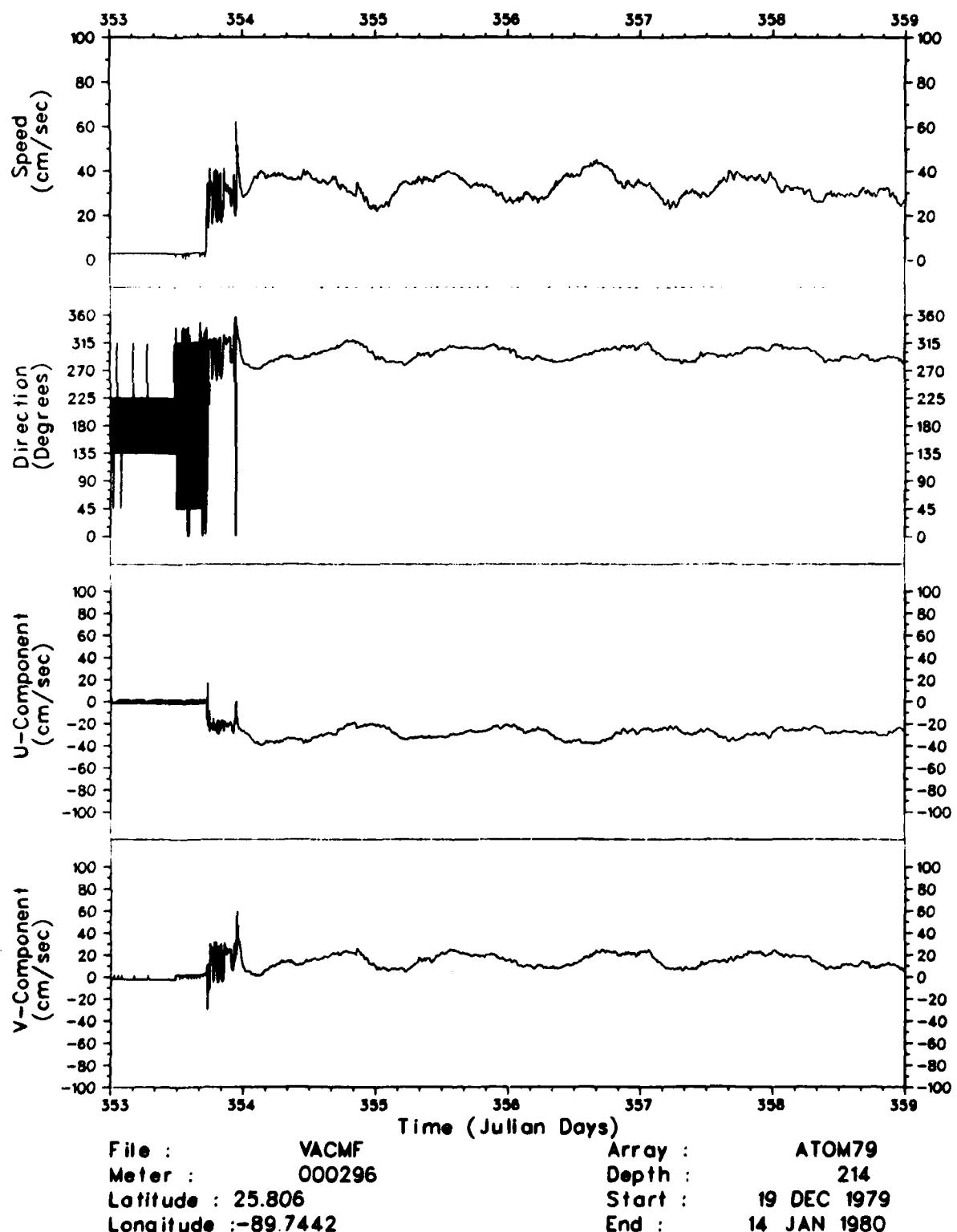
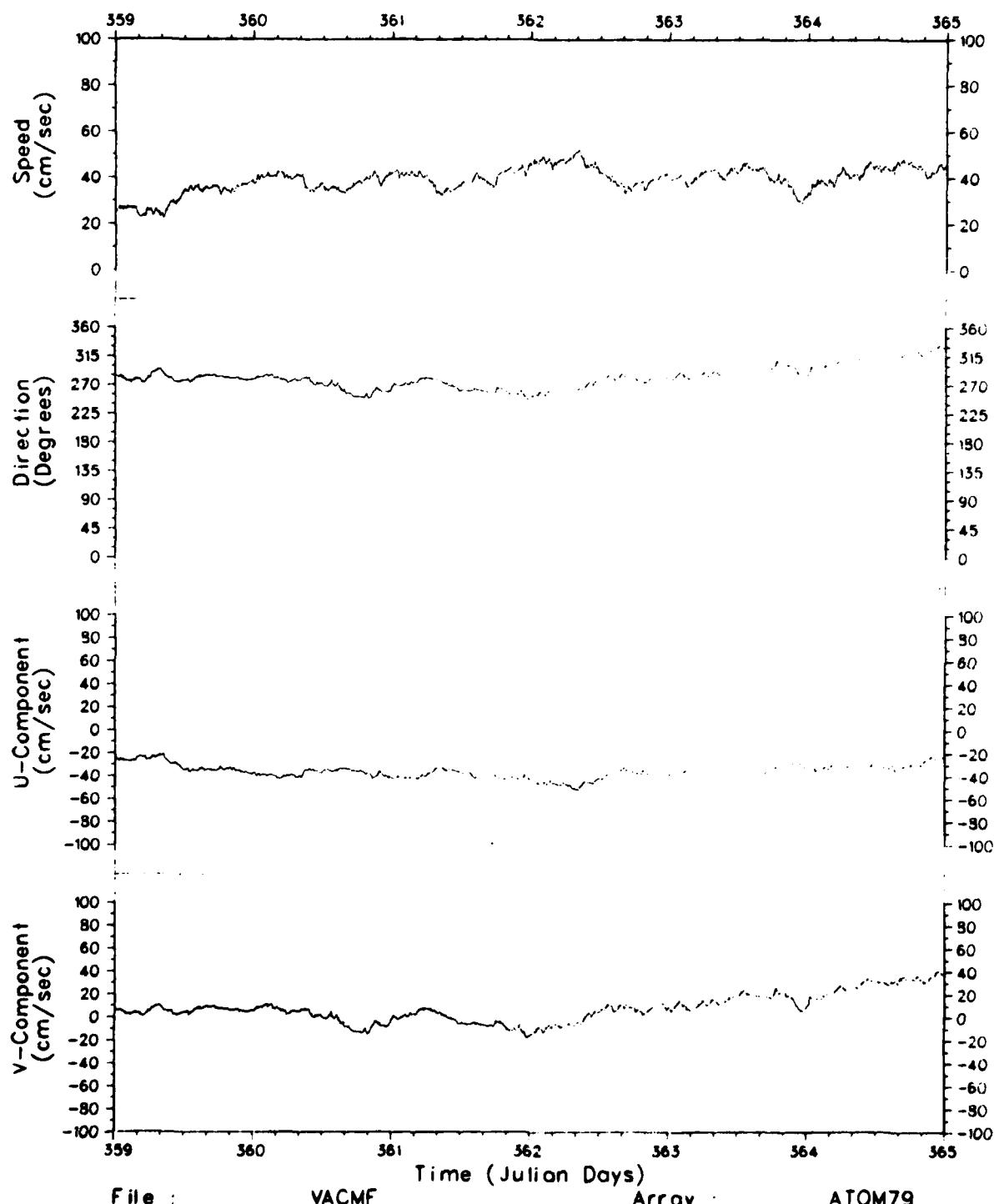
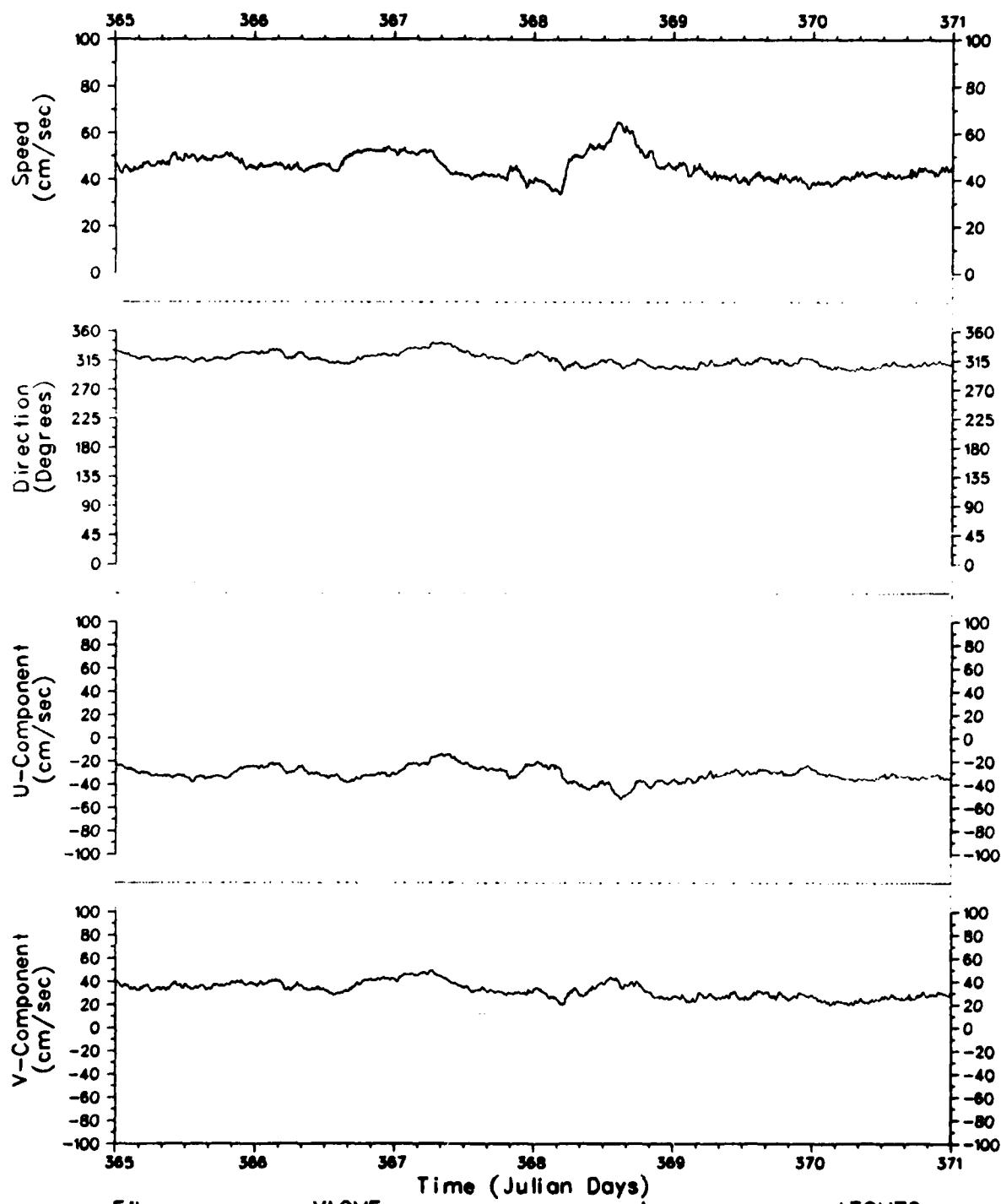


Figure 40.



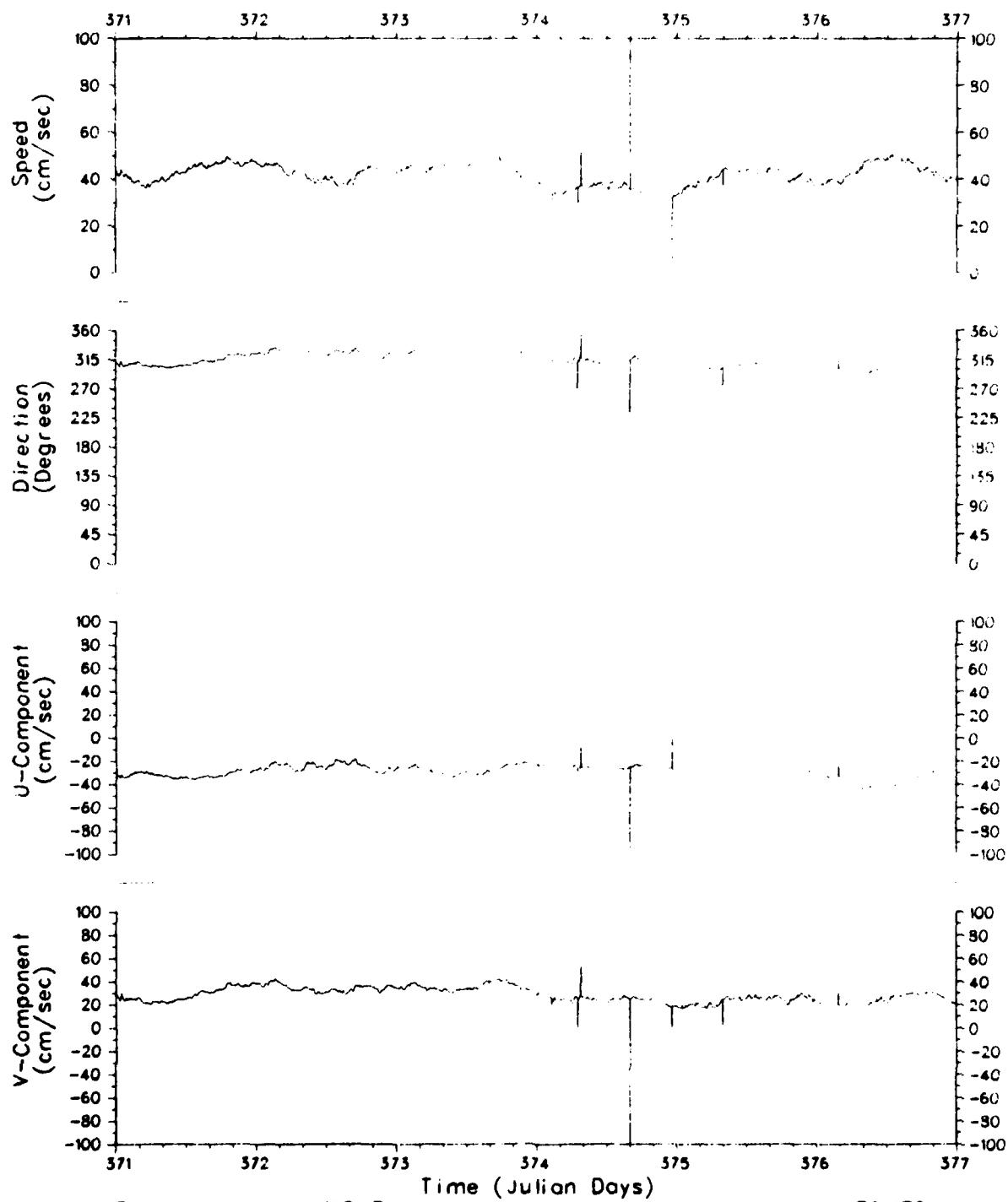
File :	VACMF	Array :	ATOM79
Meter :	000296	Depth	214
Latitude :	25.806	Start :	19 DEC 1979
Longitude :	-89.7442	End :	14 JAN 1980

Figure 41.



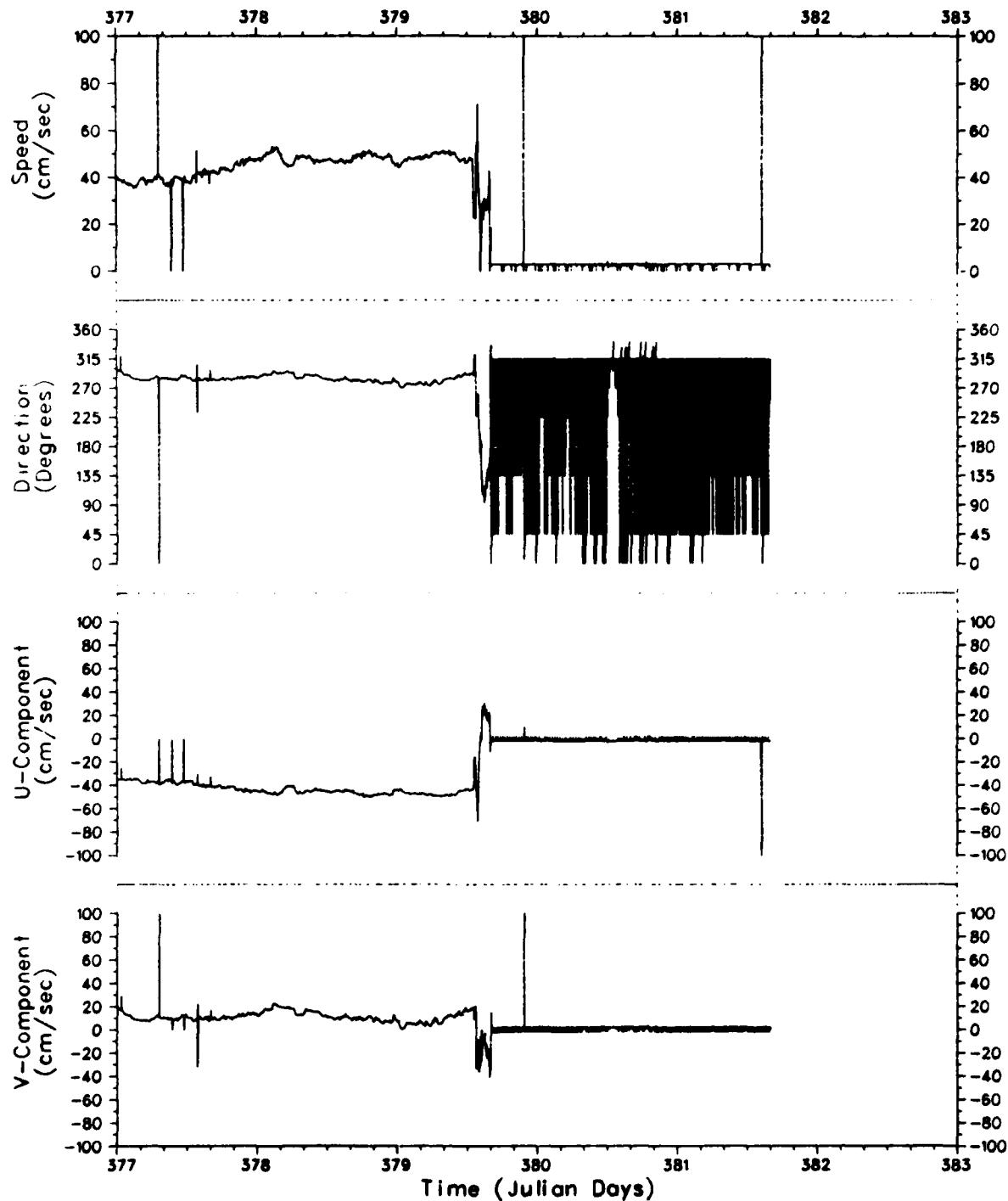
File : VACMF
 Meter : 000296
 Latitude : 25.806
 Longitude : -89.7442
 Array : ATOM79
 Depth : 214
 Start : 19 DEC 1979
 End : 14 JAN 1980

Figure 42.



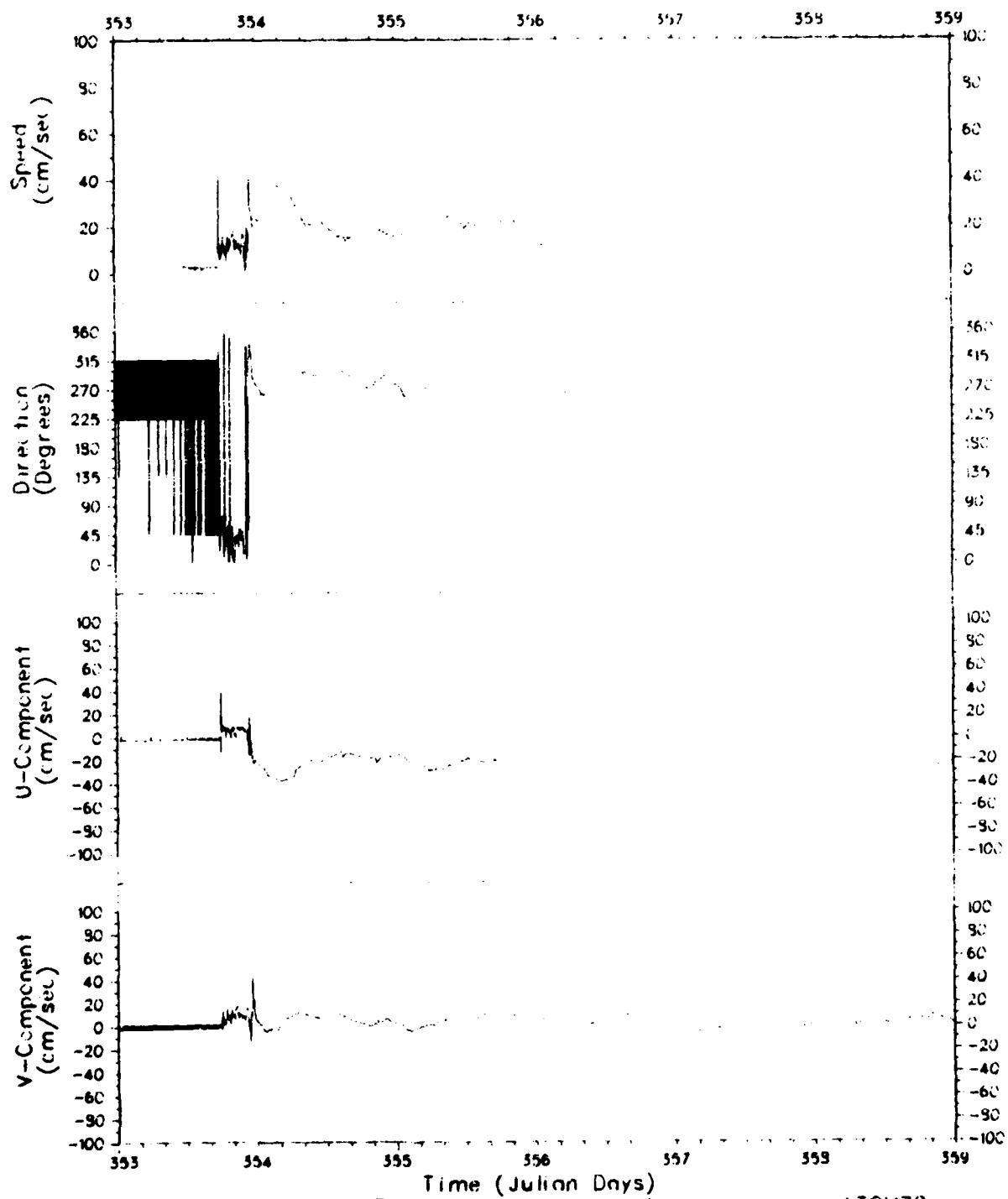
File :	VACMF	Array	ATOM79
Meter :	000296	Depth	214
Latitude :	25.806	Start :	19 DEC 1979
Longitude :	-89.7442	End :	14 JAN 1980

Figure 43.



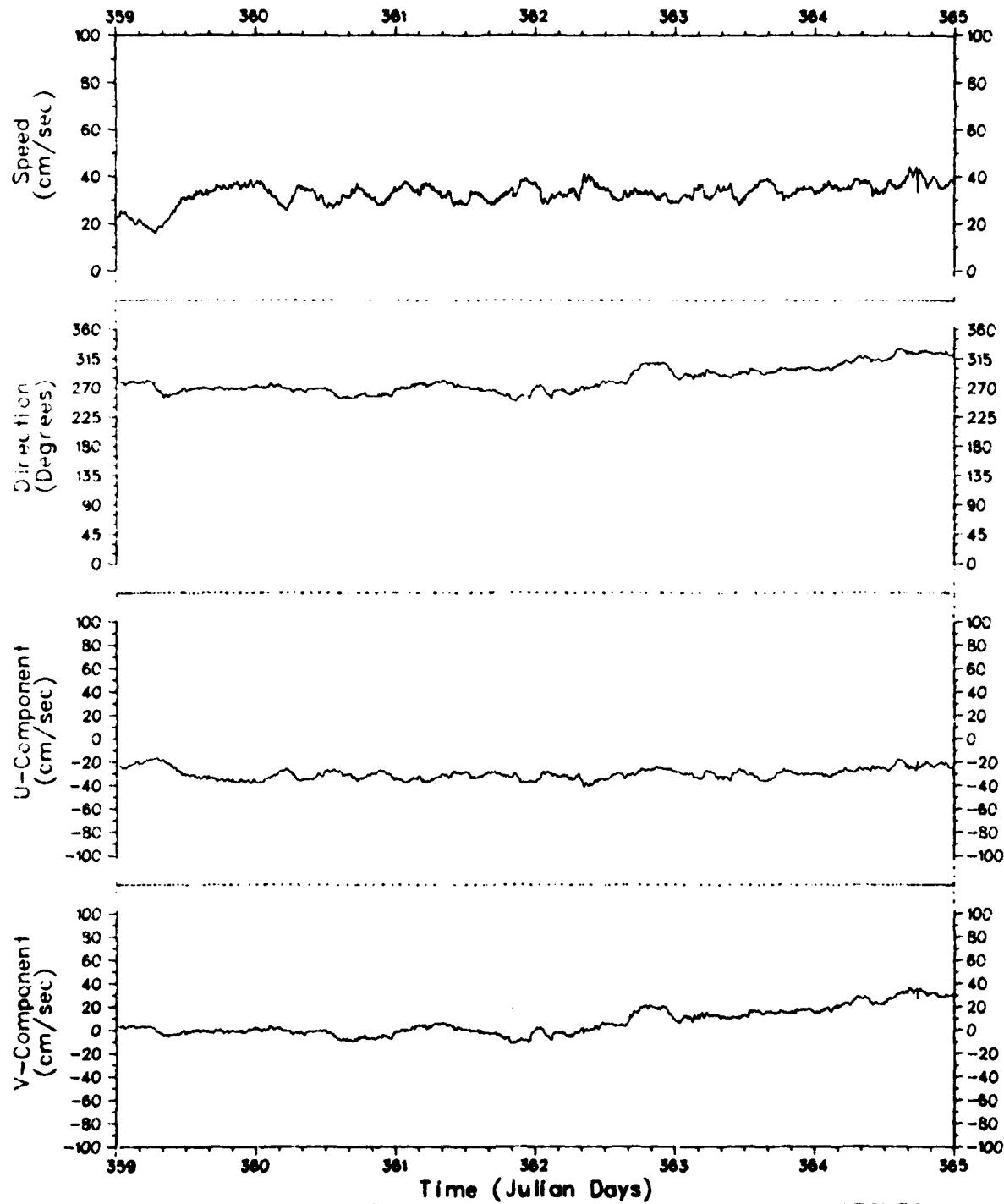
File : VACMF
 Meter : 000296
 Latitude : 25.806
 Longitude : -89.7442
 Array : ATOM79
 Depth : 214
 Start : 19 DEC 1979
 End : 14 JAN 1980

Figure 44.



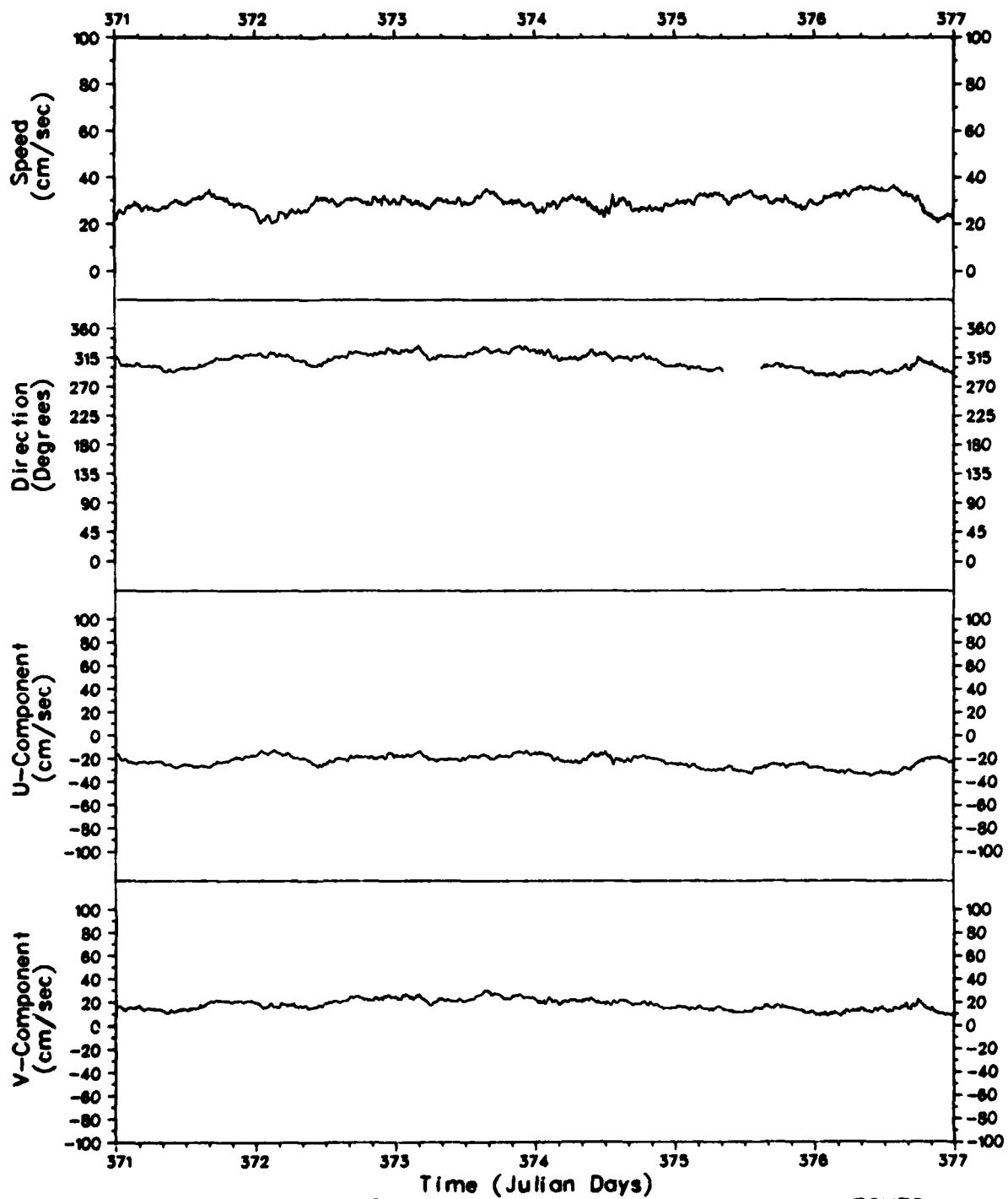
File	VACMF	Array	ATOM79
Meter	000412	Depth	350
Latitude	25.806	Start	19 DEC 1979
Longitude	-89.7442	End	14 JAN 1980

Figure 45.



File : VACMF Array : ATOM79
 Meter : 000412 Depth : 350
 Latitude : 25.806 Start : 19 DEC 1979
 Longitude : -89.7442 End : 14 JAN 1980

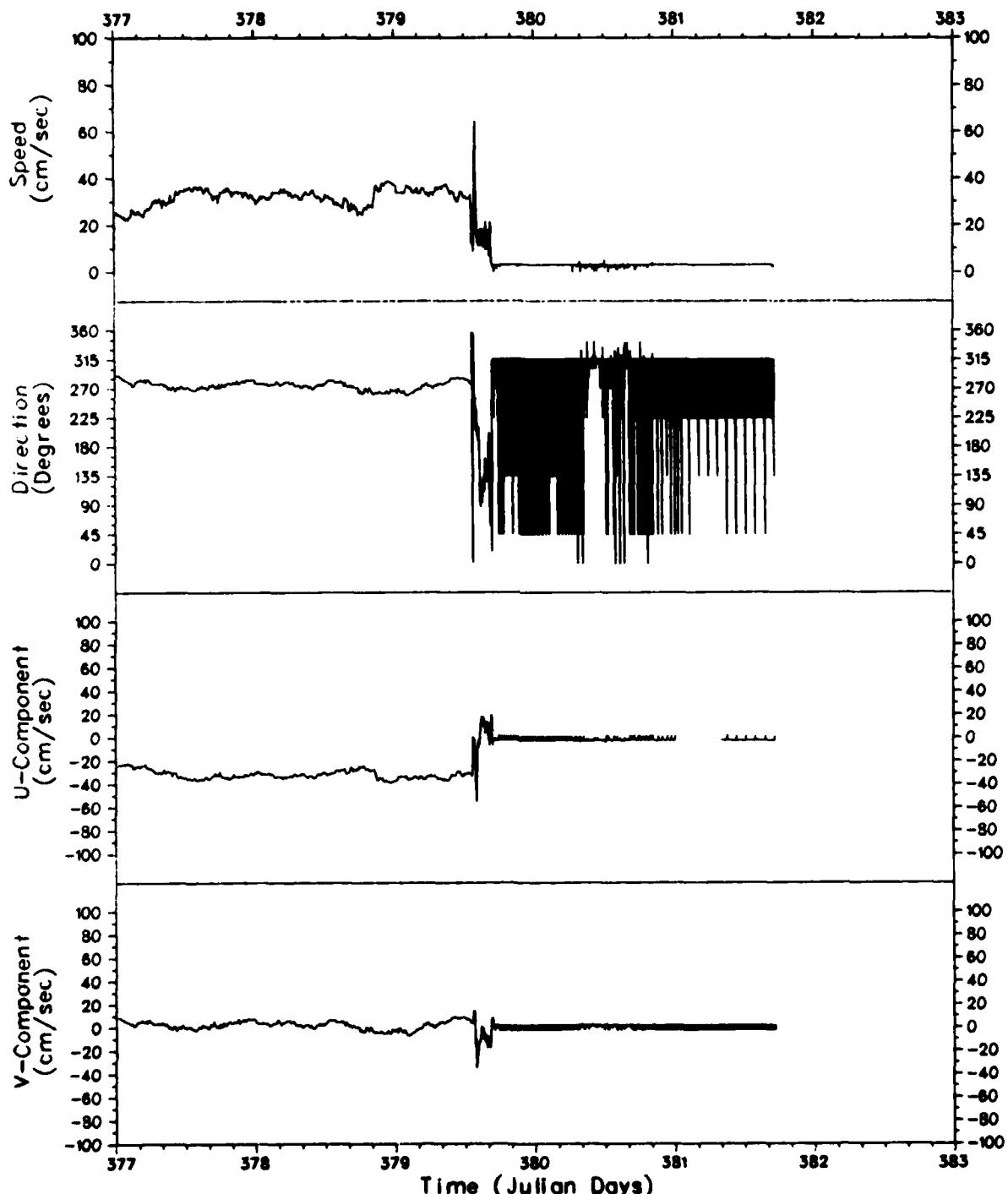
Figure 46.



File : VACMF
 Meter : 000412
 Latitude : 25.806
 Longitude : -89.7442

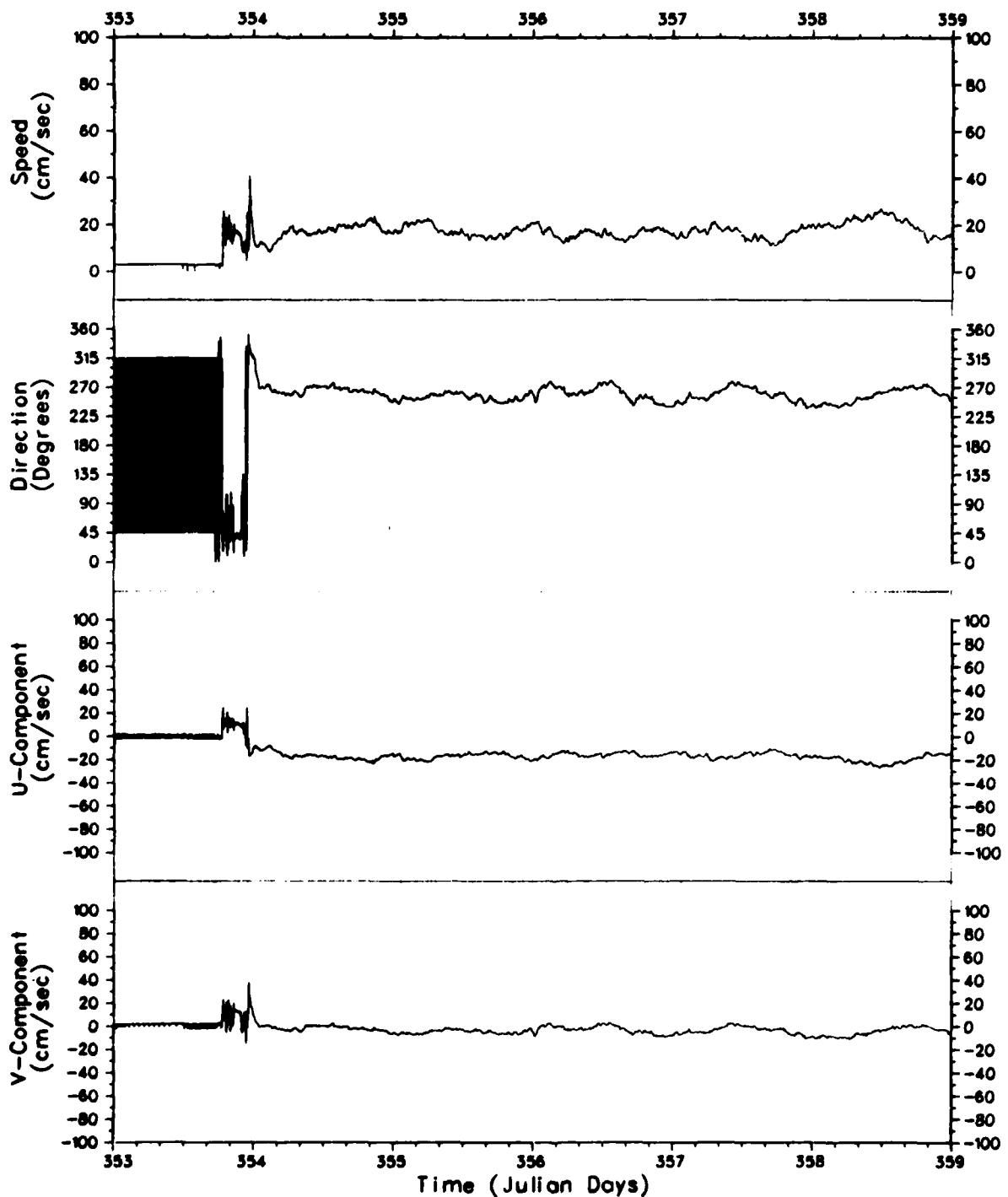
Array : ATOM79
 Depth : 350
 Start : 19 DEC 1979
 End : 14 JAN 1980

Figure 47.



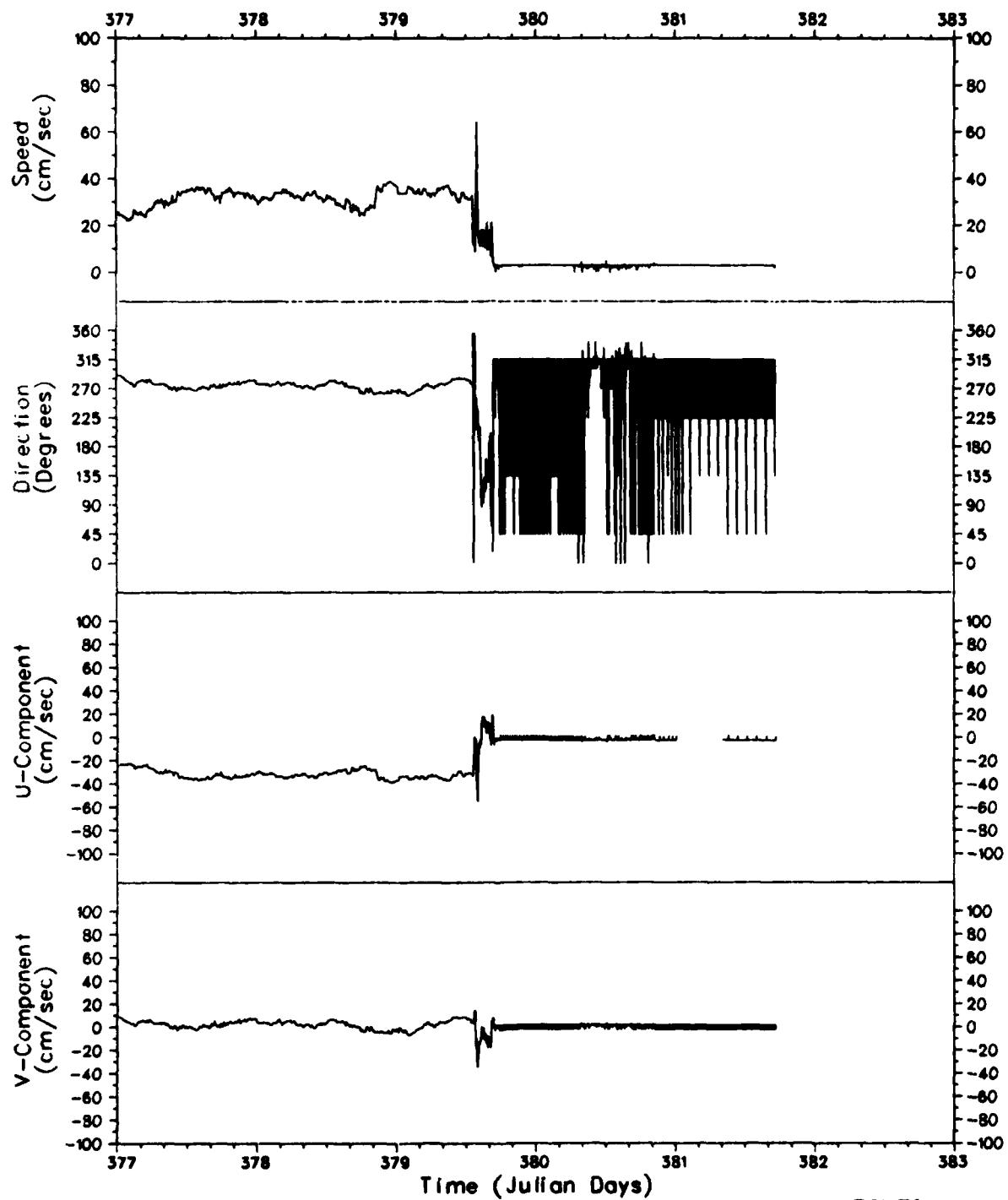
File : VACMF Array : ATOM79
 Meter : 000412 Depth : 350
 Latitude : 25.806 Start : 19 DEC 1979
 Longitude : -89.7442 End : 14 JAN 1980

Figure 48.



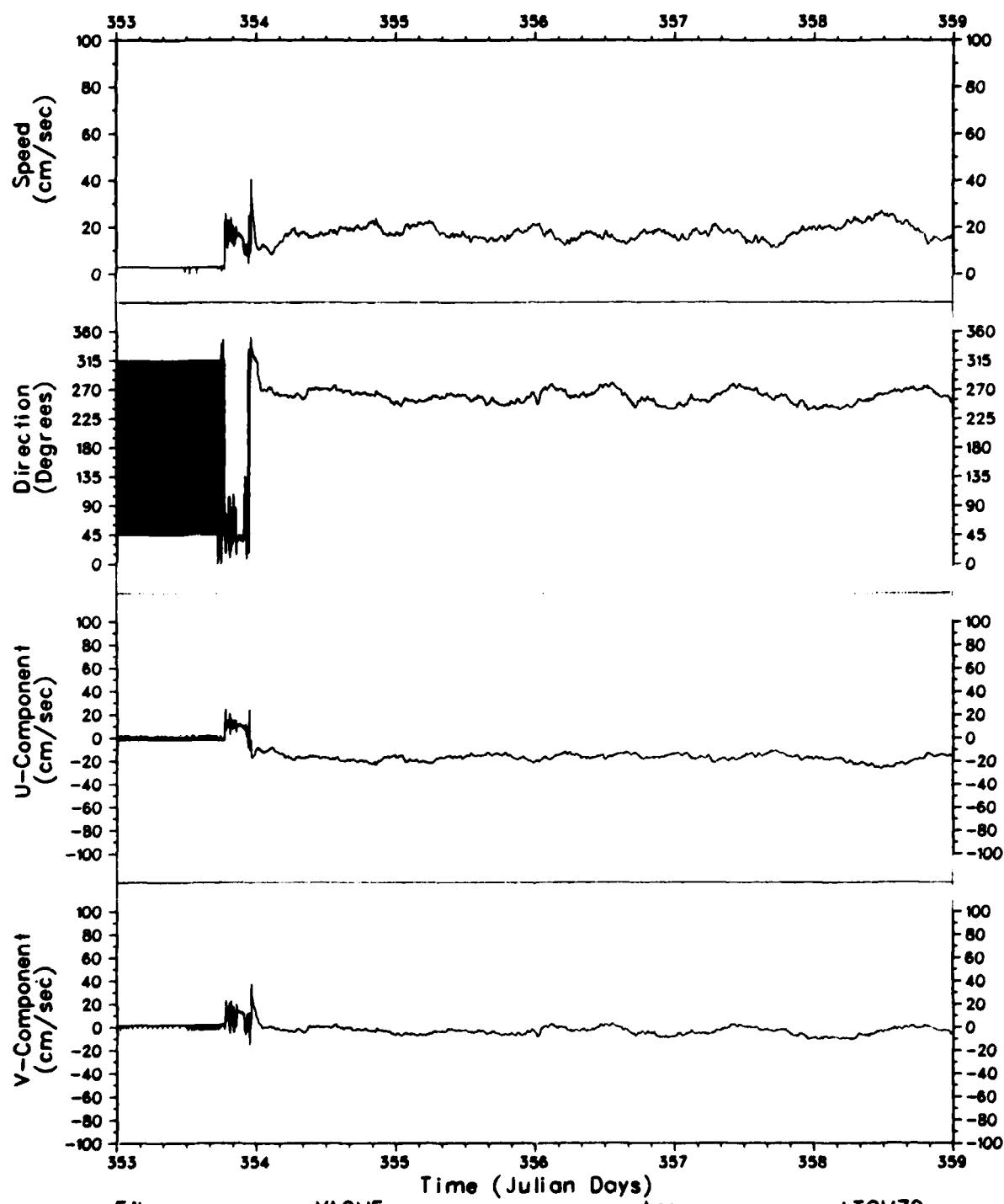
File : VACMF
 Meter : 000289
 Latitude : 25.806
 Longitude : -89.7442
 Array : ATOM79
 Depth : 500
 Start : 19 DEC 1979
 End : 14 JAN 1980

Figure 49.



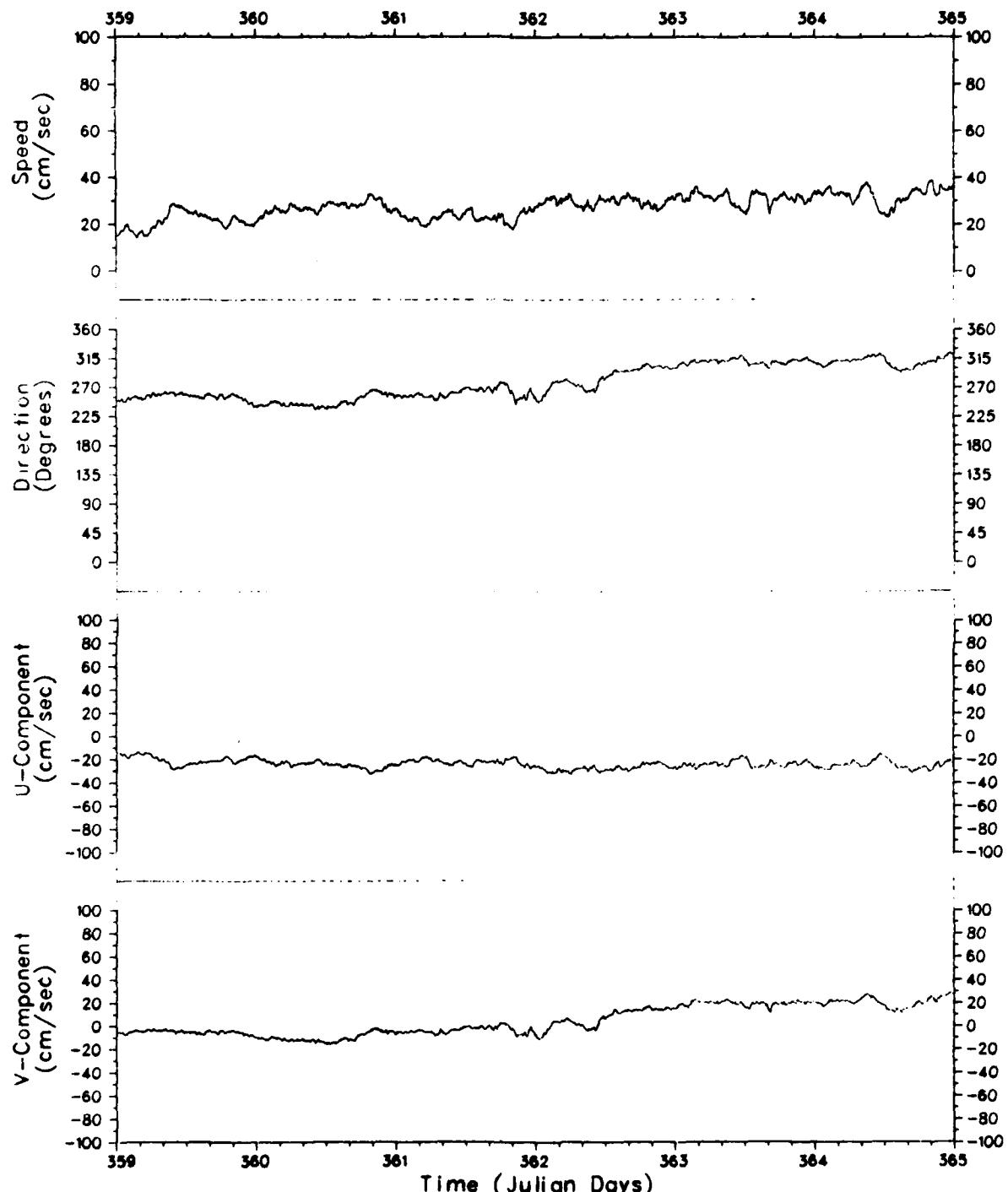
File : VACMF Array : ATOM79
 Meter : 000412 Depth : 350
 Latitude : 25.806 Start : 19 DEC 1979
 Longitude : -89.7442 End : 14 JAN 1980

Figure 48.



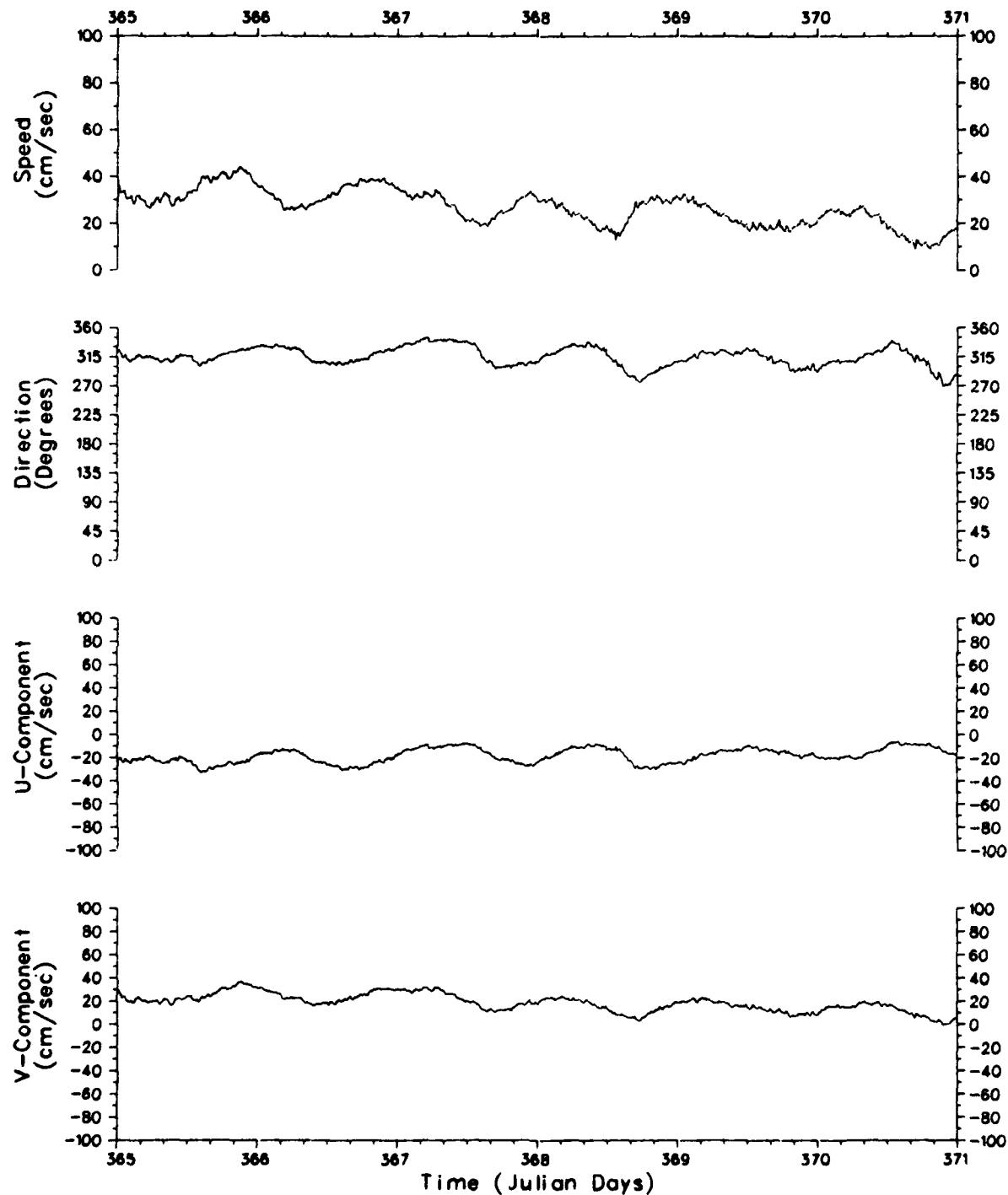
File : VACMF Array : ATOM79
 Meter : 000289 Depth : 500
 Latitude : 25.806 Start : 19 DEC 1979
 Longitude : -89.7442 End : 14 JAN 1980

Figure 49.



File :	VACMF	Array :	ATOM79
Meter :	000289	Depth :	500
Latitude :	25.806	Start :	19 DEC 1979
Longitude :	-89.7442	End :	14 JAN 1980

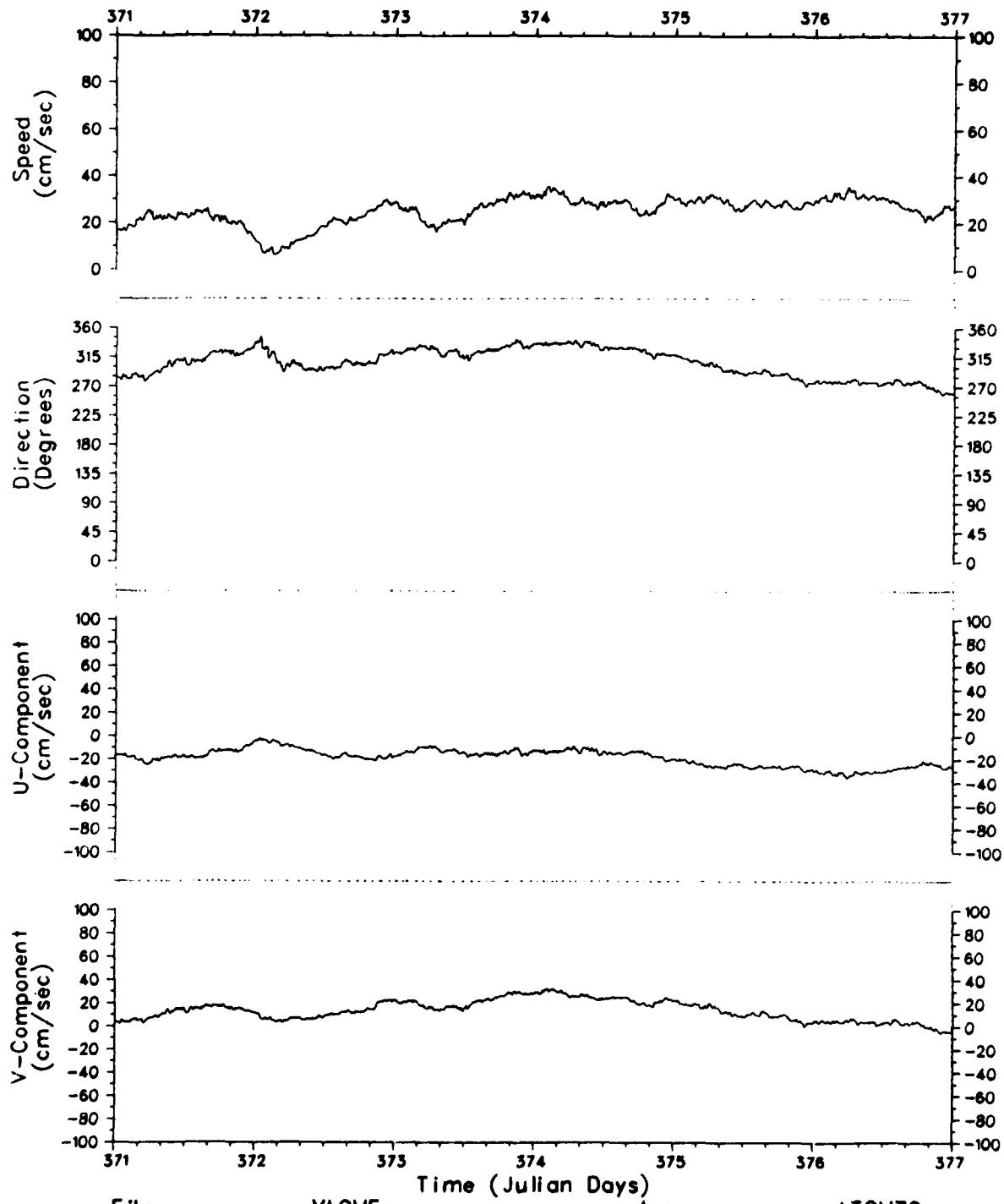
Figure 50.



File : VACMF
 Meter : 000289
 Latitude : 25.80

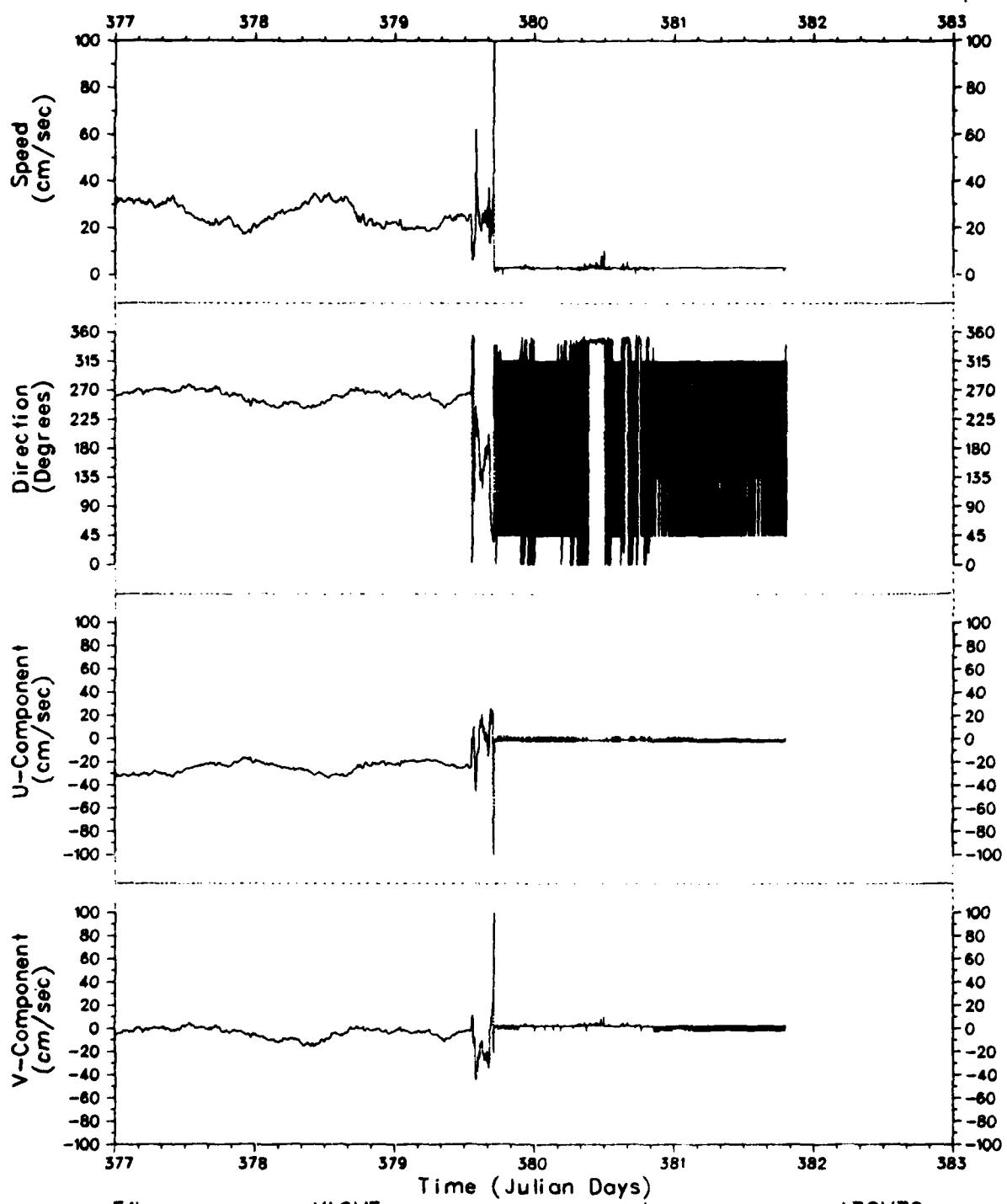
Array : ATOM79
 Depth : 500

Figure 51.



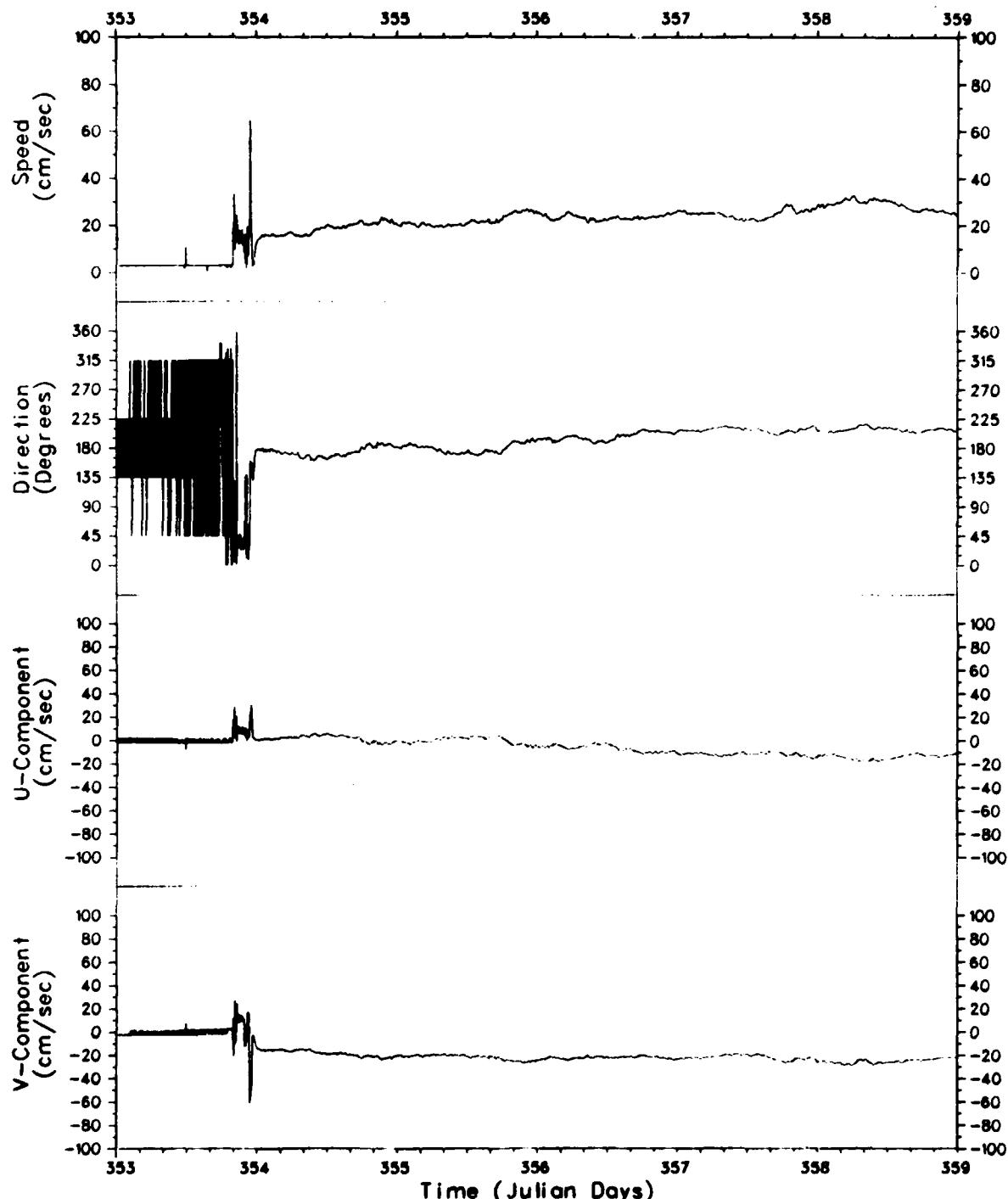
File :	VACMF	Array :	ATOM79
Meter :	000289	Depth :	500
Latitude :	25.806	Start :	19 DEC 1979
Longitude :	-89.7442	End :	14 JAN 1980

Figure 52.



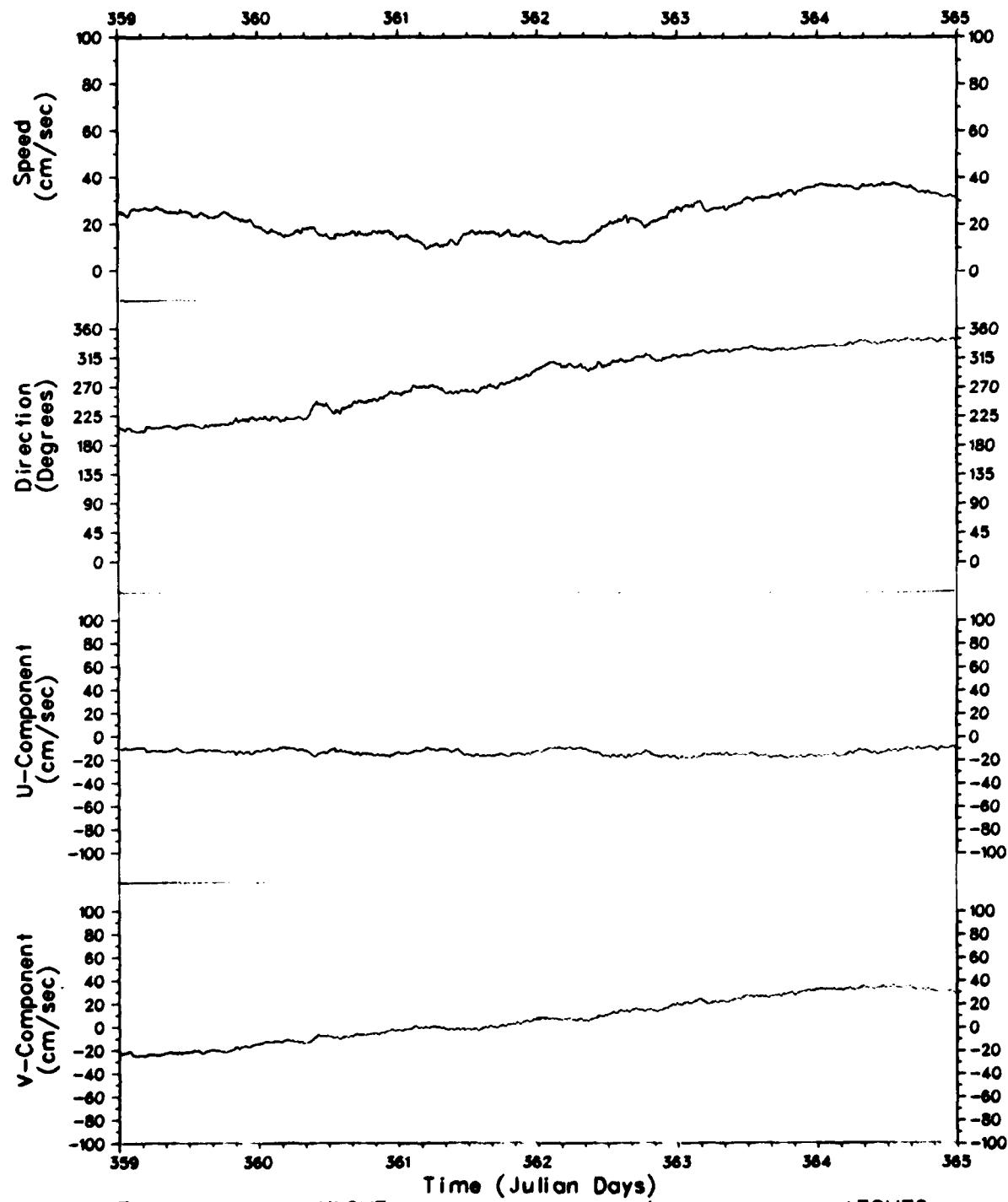
File :	VACMF	Array :	ATOM79
Meter :	000289	Depth :	500
Latitude :	25.806	Start :	19 DEC 1979
Longitude :	-89.7442	End :	14 JAN 1980

Figure 53.



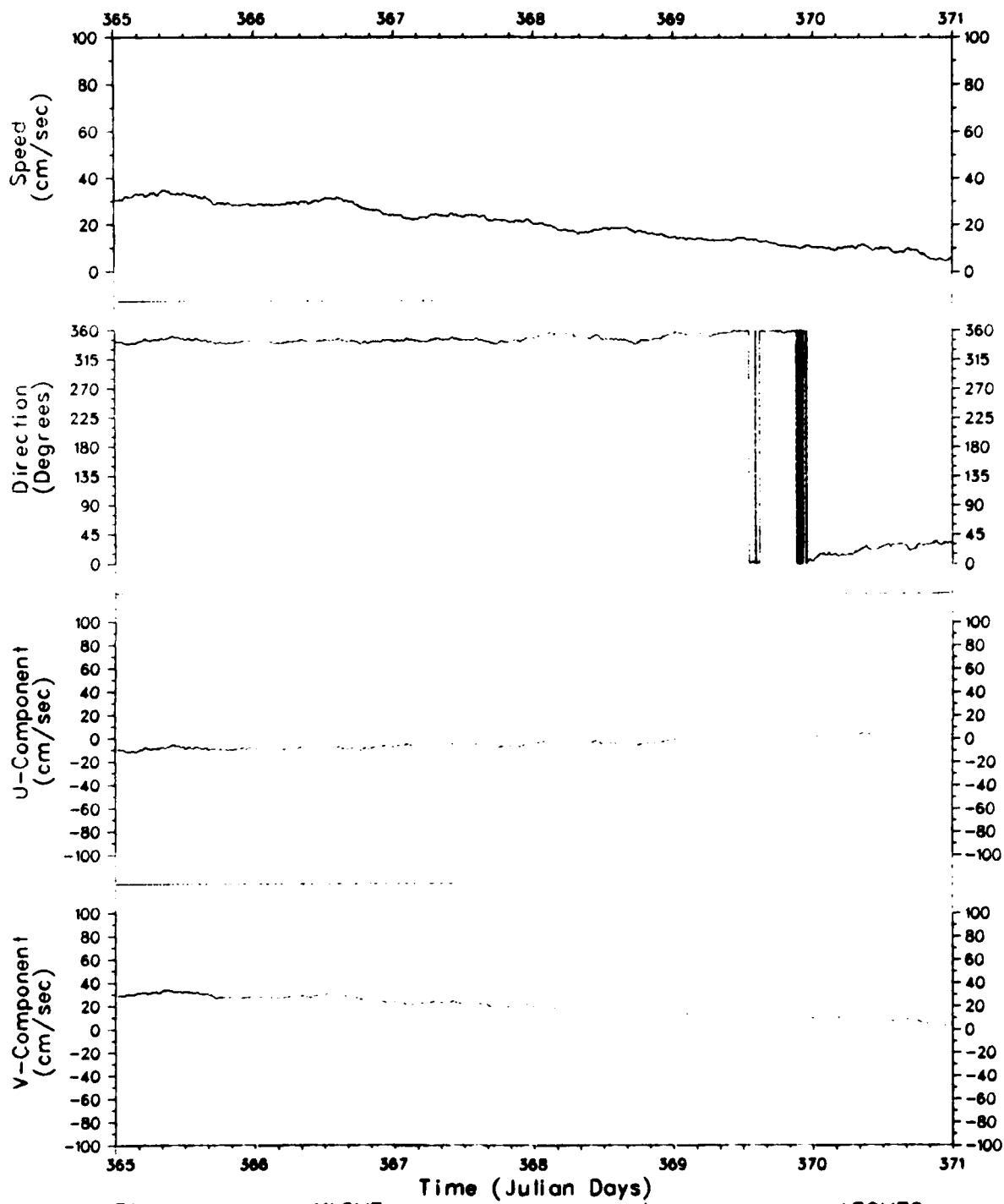
File :	VACMF	Array :	ATOM79
Meter :	000298	Depth :	1400
Latitude :	25.806	Start :	19 DEC 1979
Longitude :	-89.7442	End :	14 JAN 1980

Figure 54.



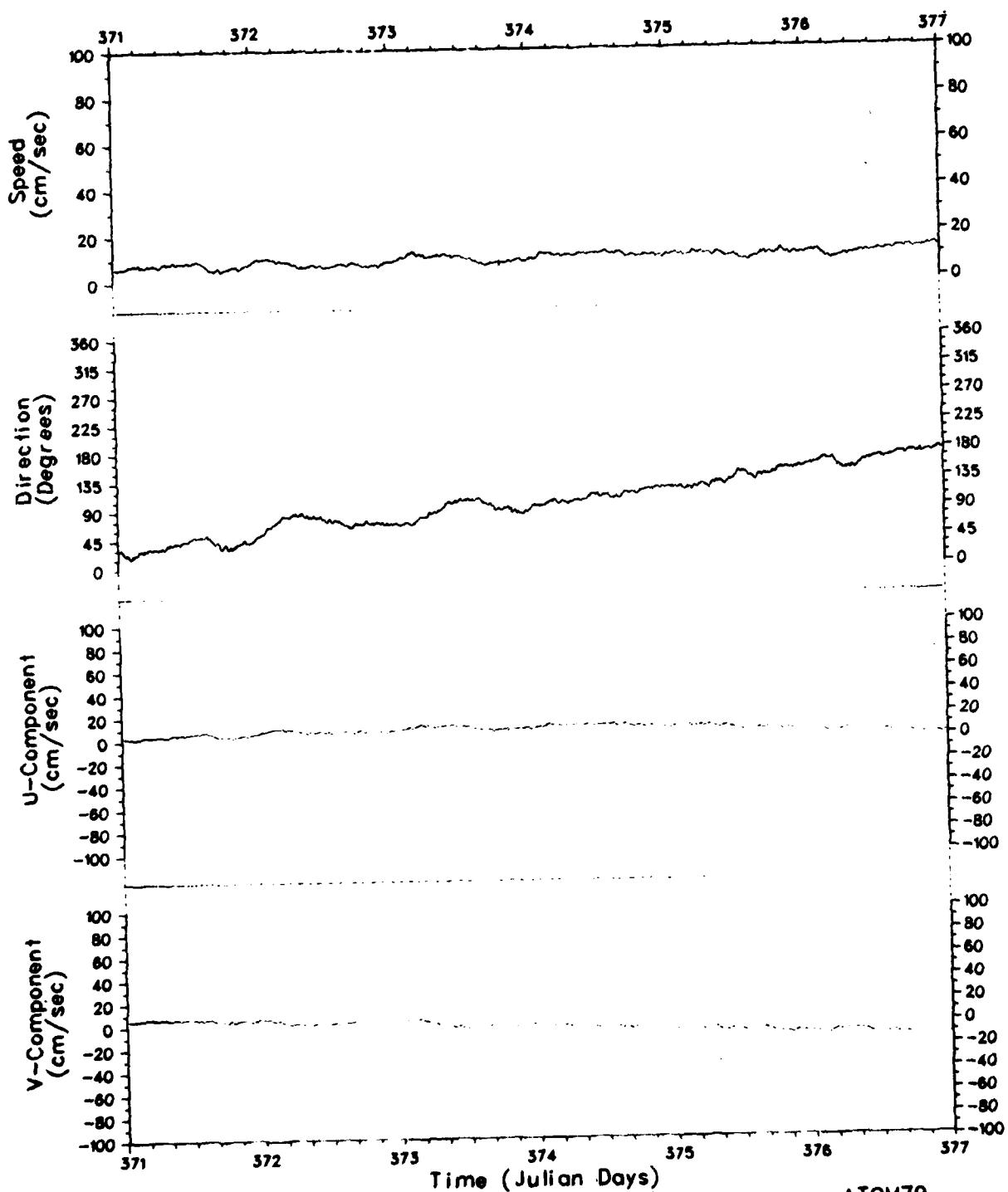
File :	VACMF	Array :	ATOM79
Meter :	000298	Depth :	1400
Latitude :	25.806	Start :	19 DEC 1979
Longitude :	-89.7442	End :	14 JAN 1980

Figure 55.



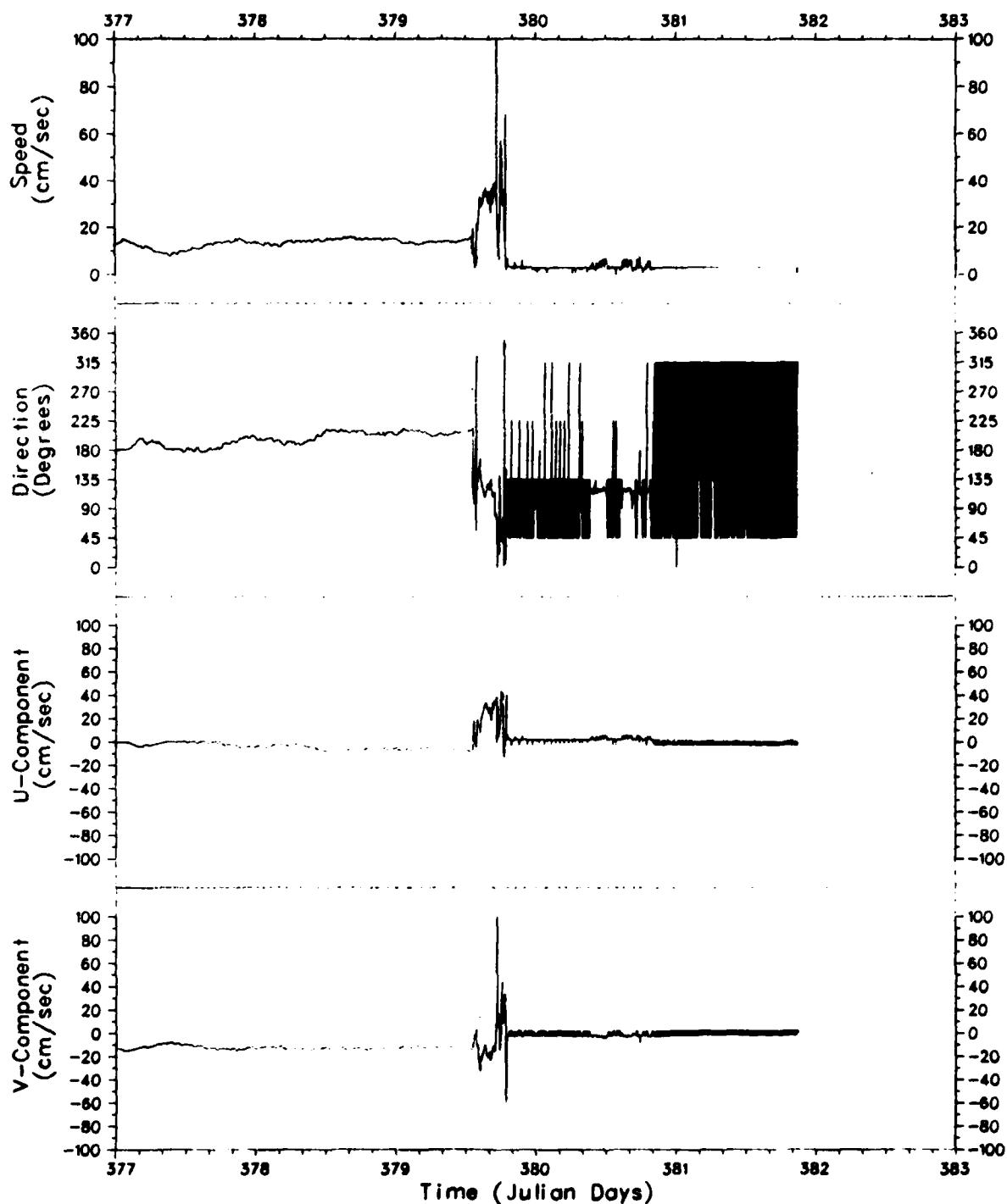
File :	VACMF	Array :	ATOM79
Meter :	000298	Depth :	1400
Latitude :	25.806	Start :	19 DEC 1979
Longitude :	-89.7442	End :	14 JAN 1980

Figure 56.



File : VACMF
 Meter : 000298
 Latitude : 25.806
 Longitude : -89.7442
 Array : ATOM79
 Depth : 1400
 Start : 19 DEC 1979
 End : 14 JAN 1980

Figure 57.



File :	VACMF	Array :	ATOM79
Meter :	000298	Depth :	1400
Latitude :	25.806	Start :	19 DEC 1979
Longitude :	-89.7442	End :	14 JAN 1980

Figure 58.

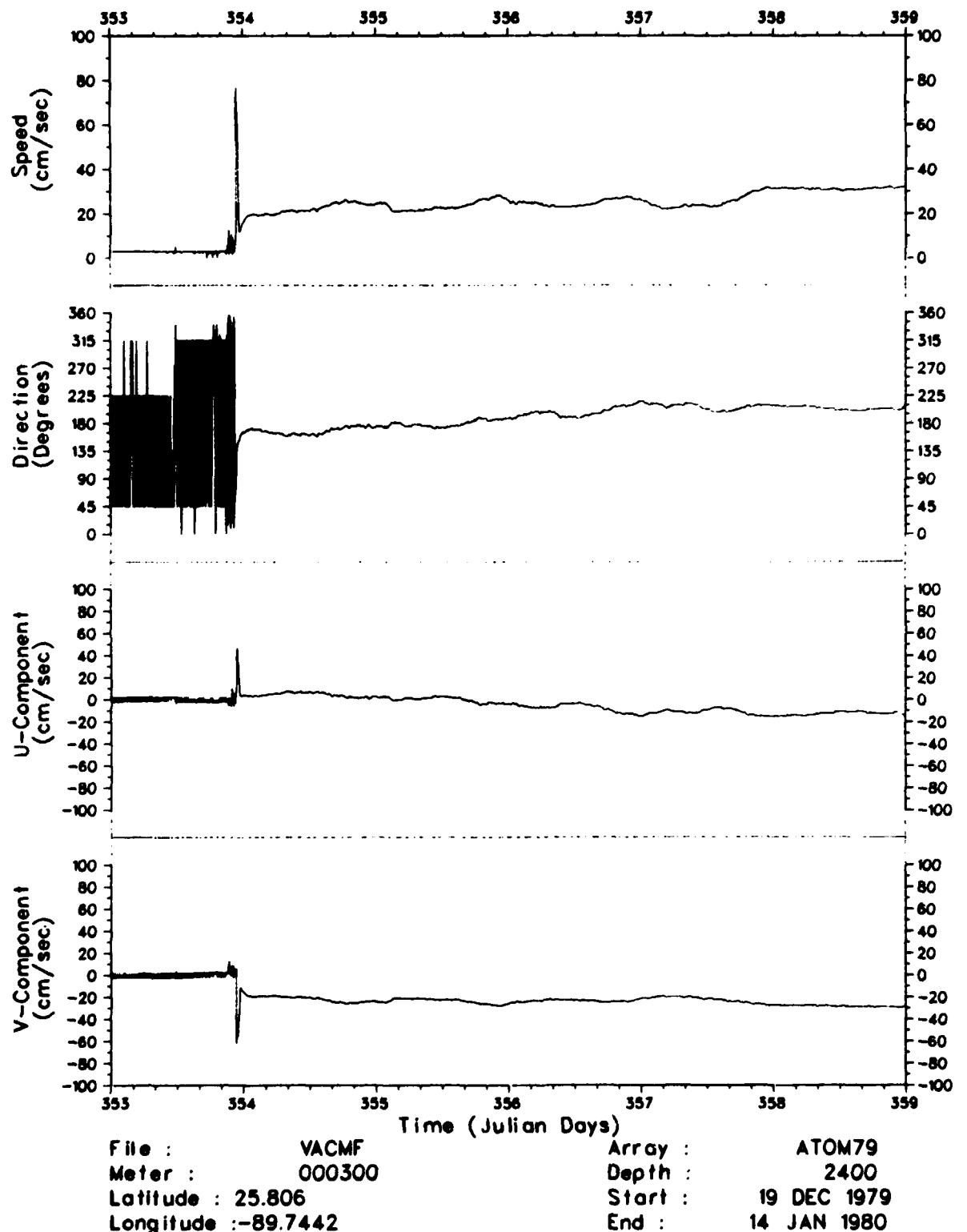
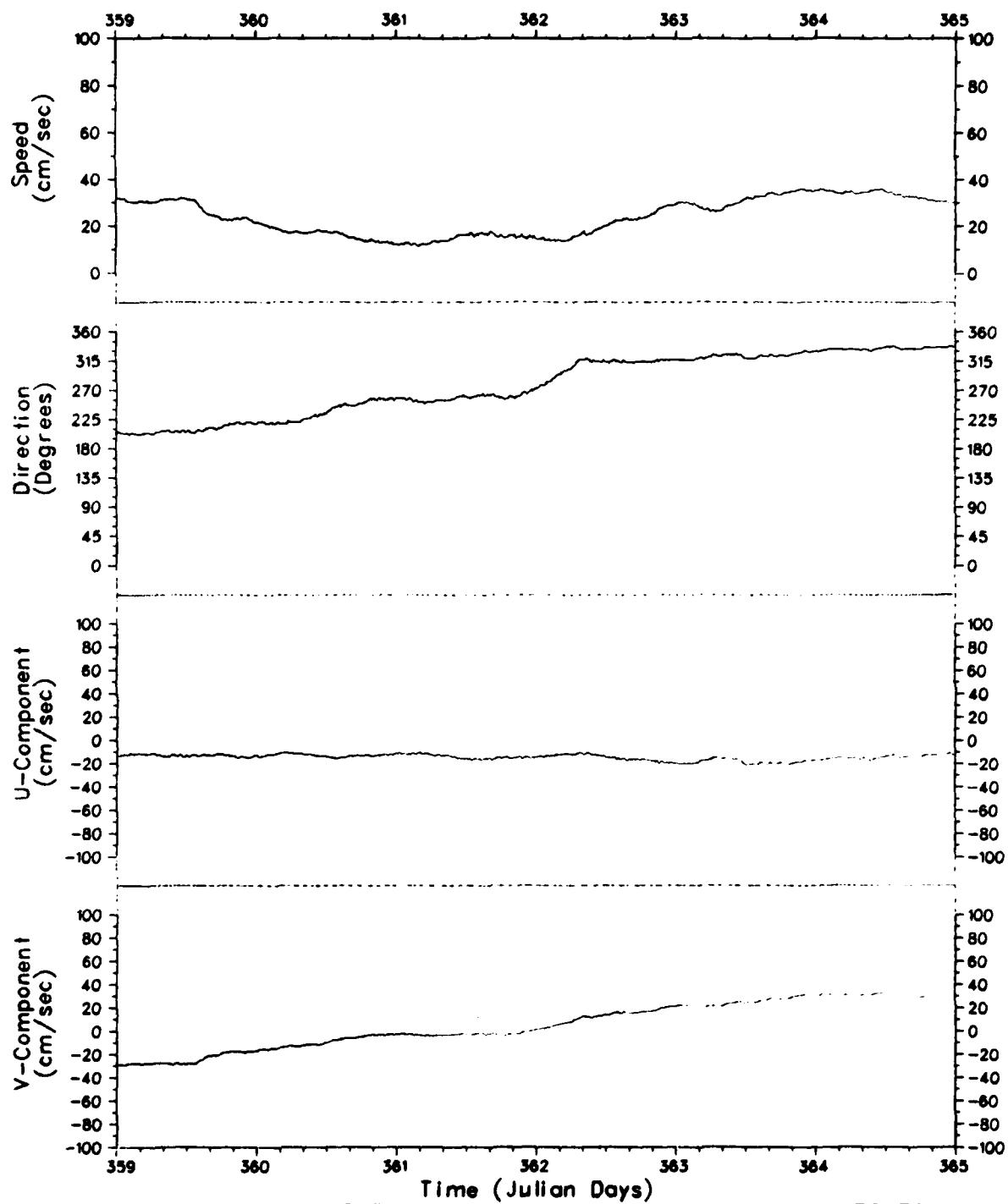


Figure 59.



File :	VACMF	Array :	ATOM79
Meter :	000300	Depth :	2400
Latitude :	25.806	Start :	19 DEC 1979
Longitude :	-89.7442	End :	14 JAN 1980

Figure 60.

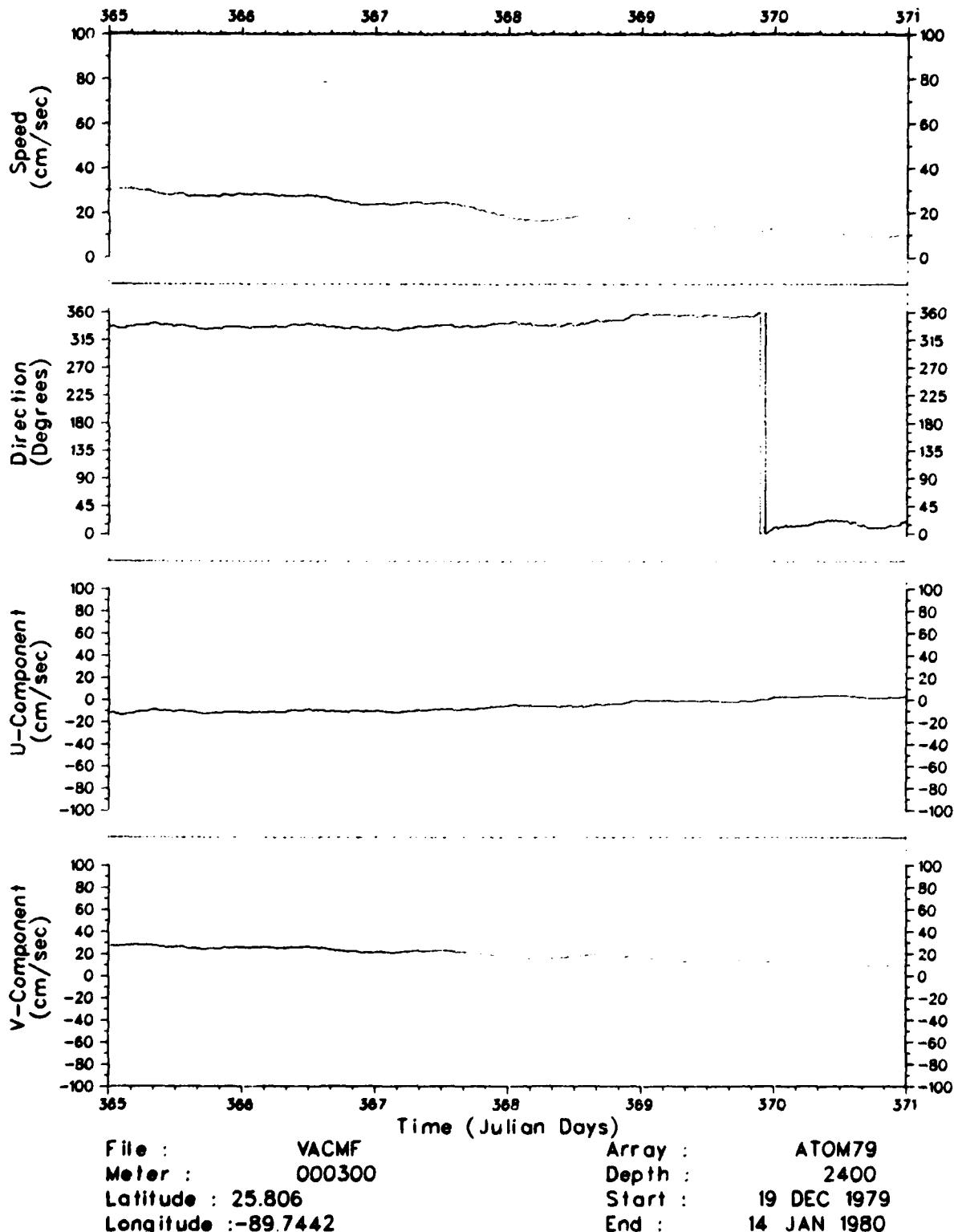
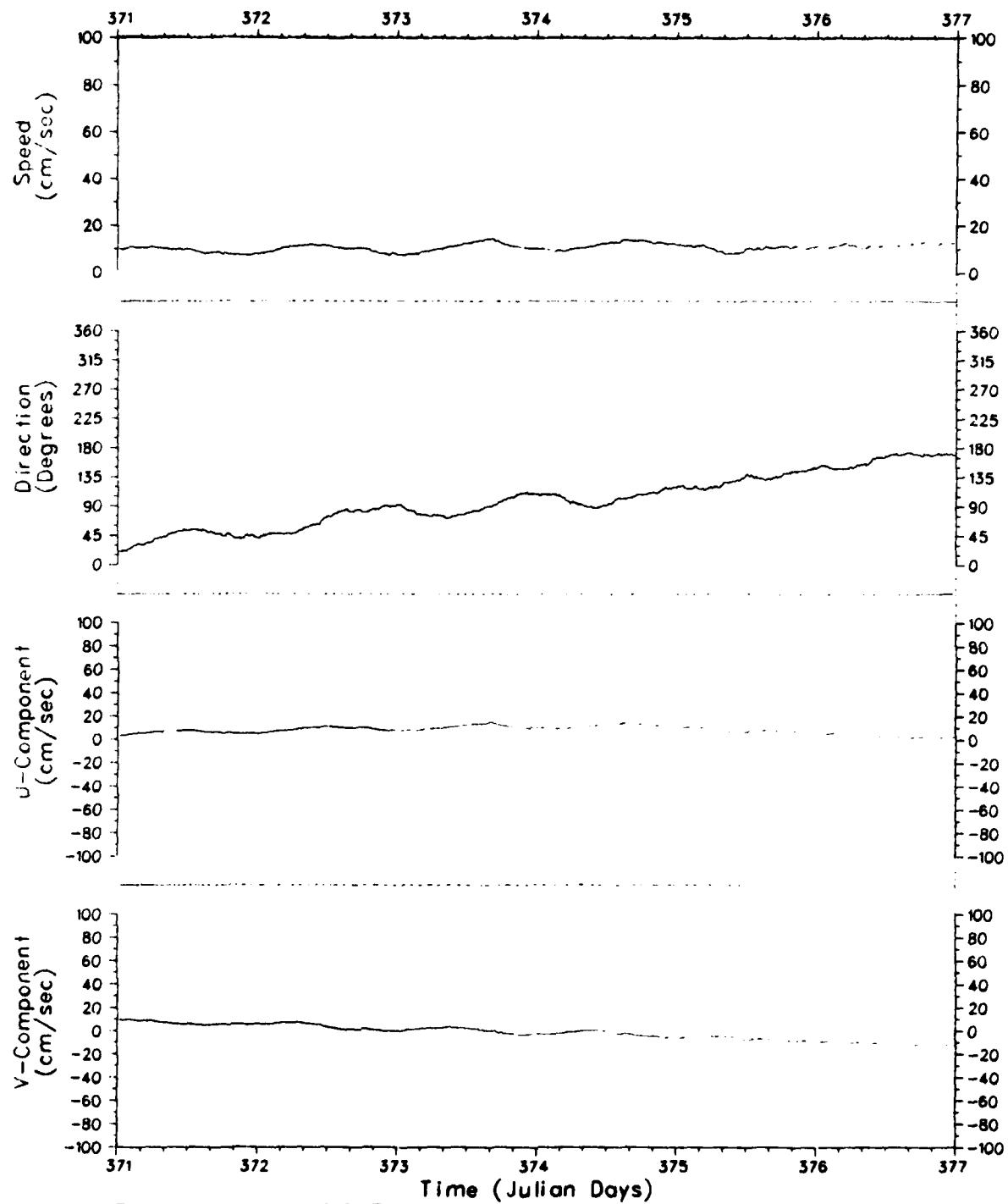
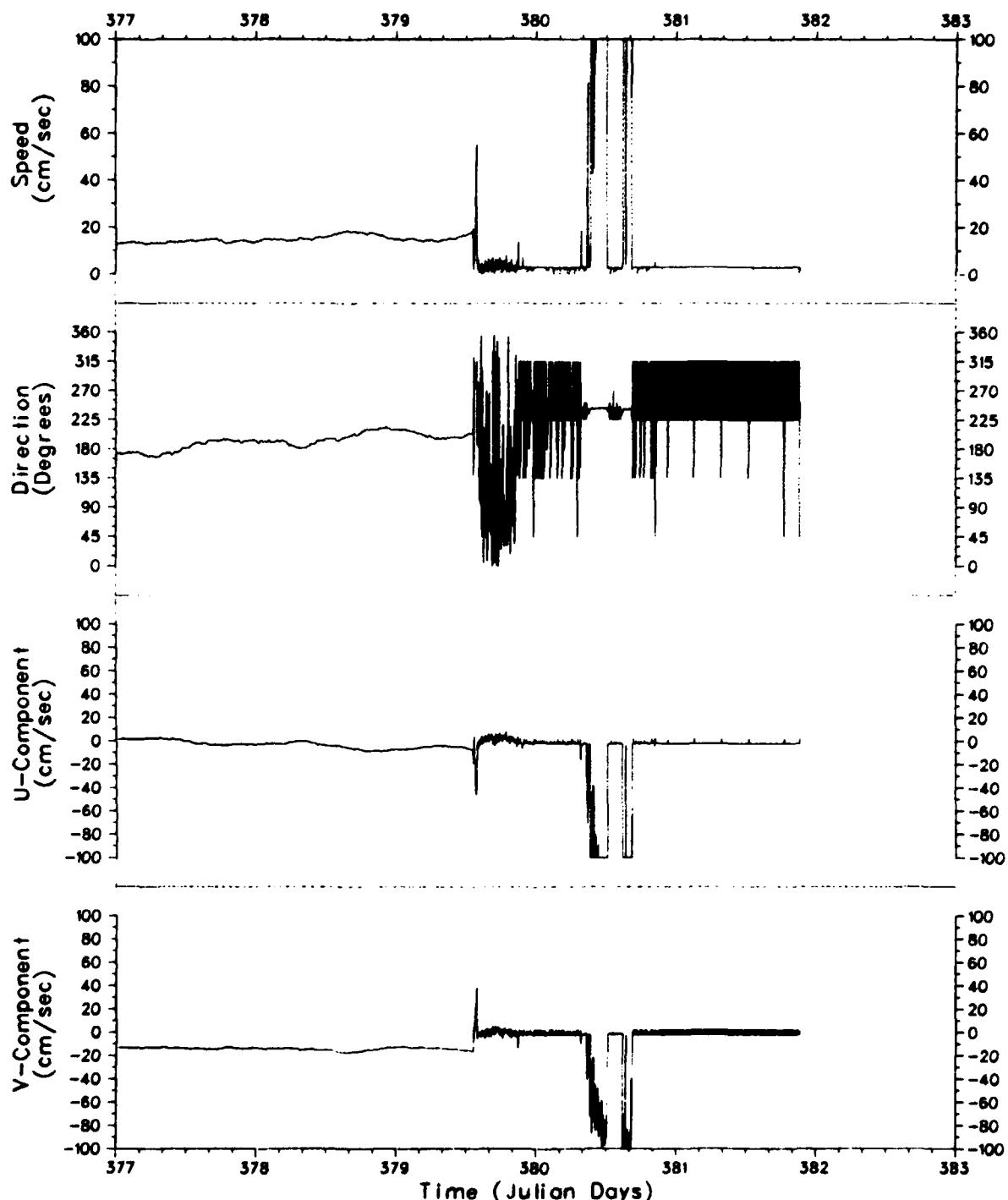


Figure 61.



File : VACMF Array : ATOM79
 Meter : 000300 Depth : 2400
 Latitude : 25.806 Start : 19 DEC 1979
 Longitude : -89.7442 End : 14 JAN 1980

Figure 62.



File :	VACMF	Array :	ATOM79
Meter :	000300	Depth :	2400
Latitude :	25.806	Start :	19 DEC 1979
Longitude :	-89.7442	End :	14 JAN 1980

Figure 63.

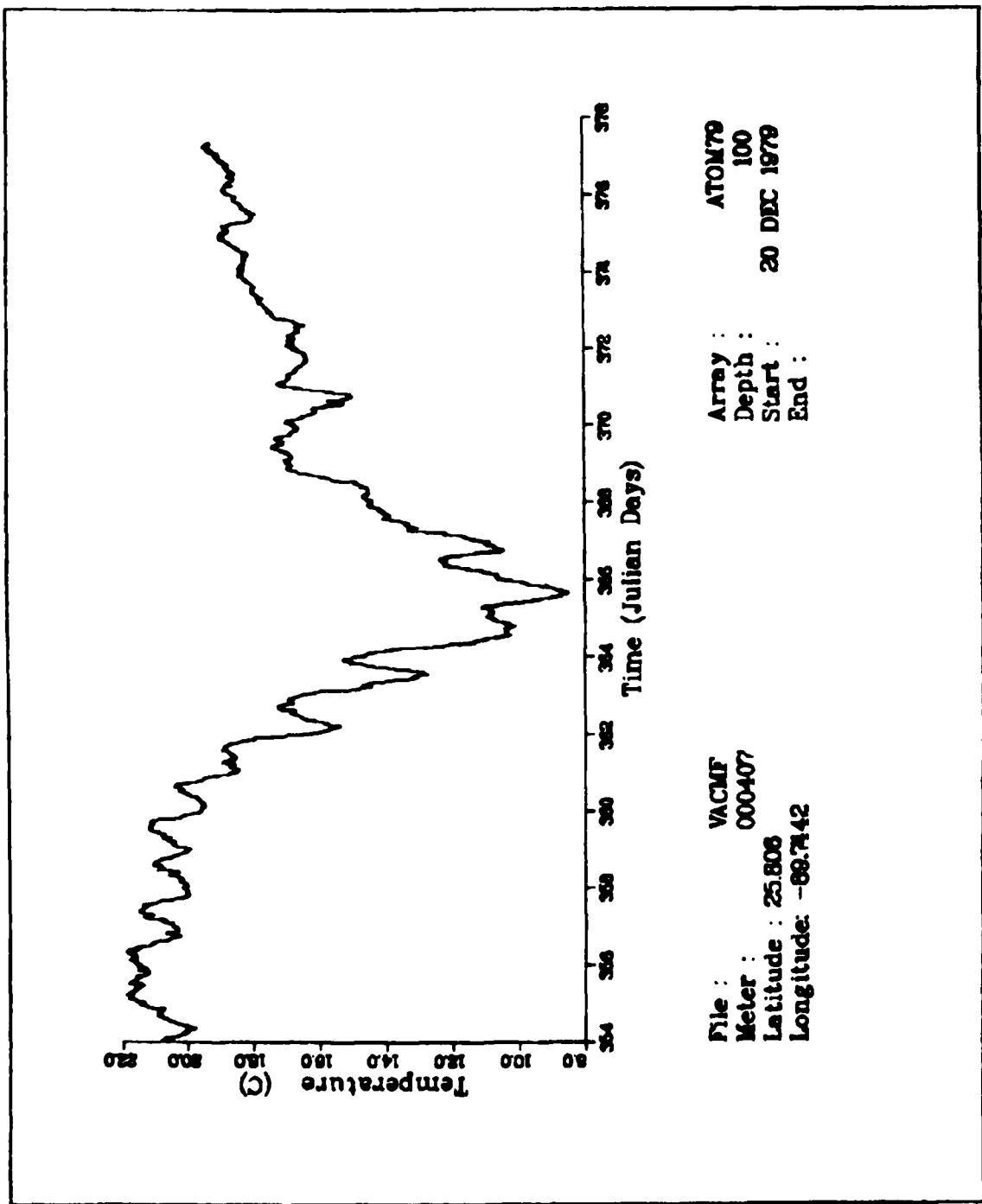


Figure 64.

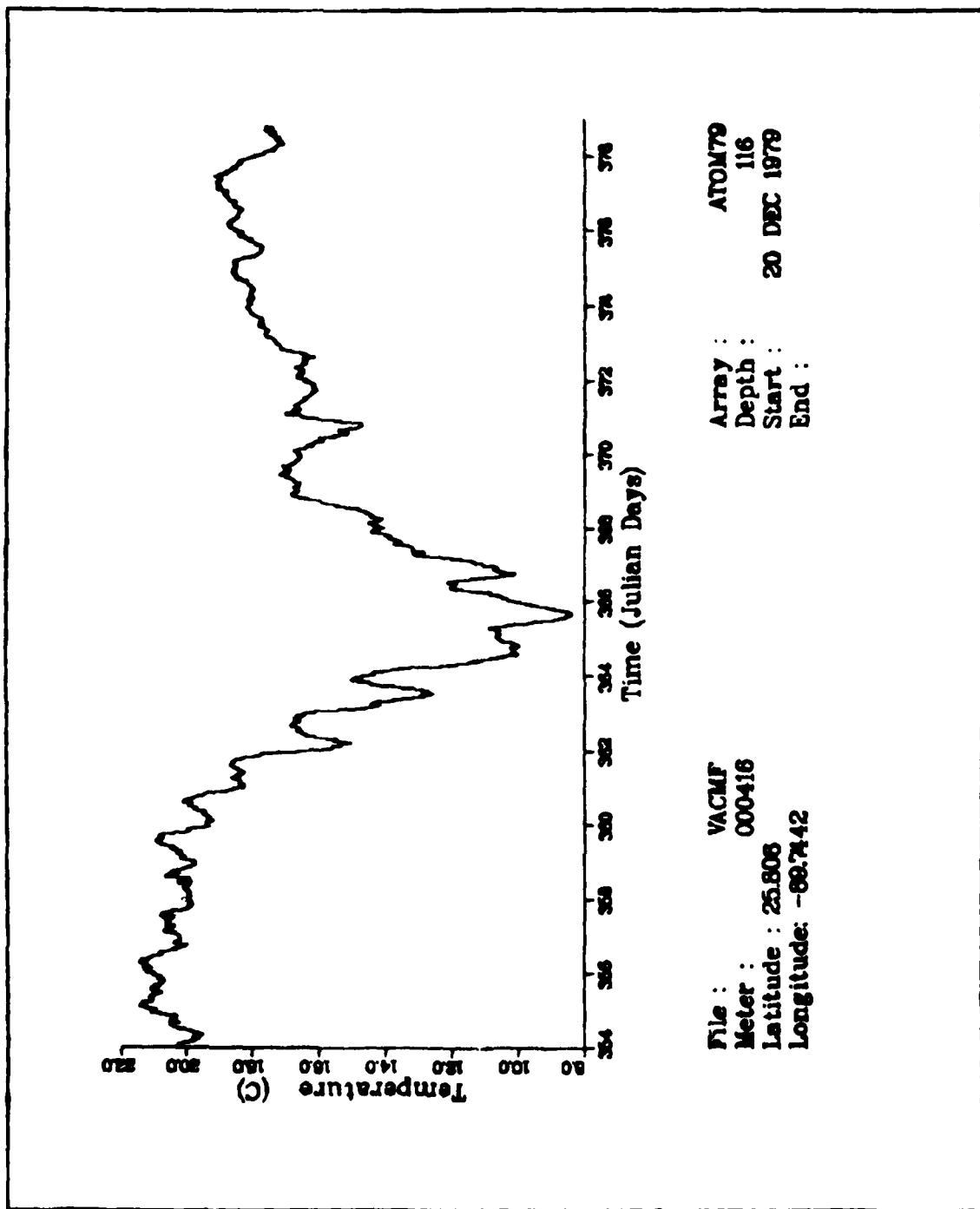


Figure 65.

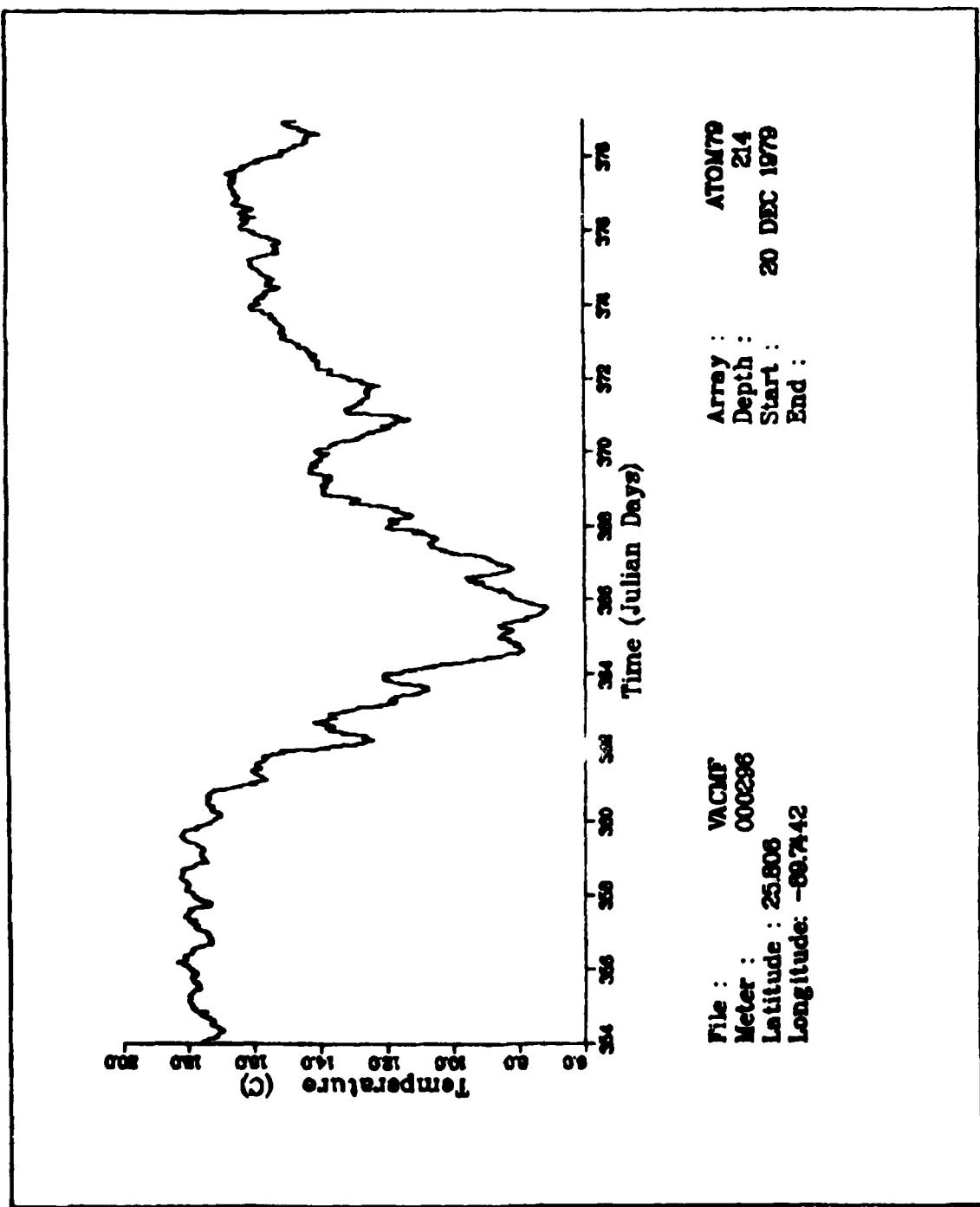


Figure 66.

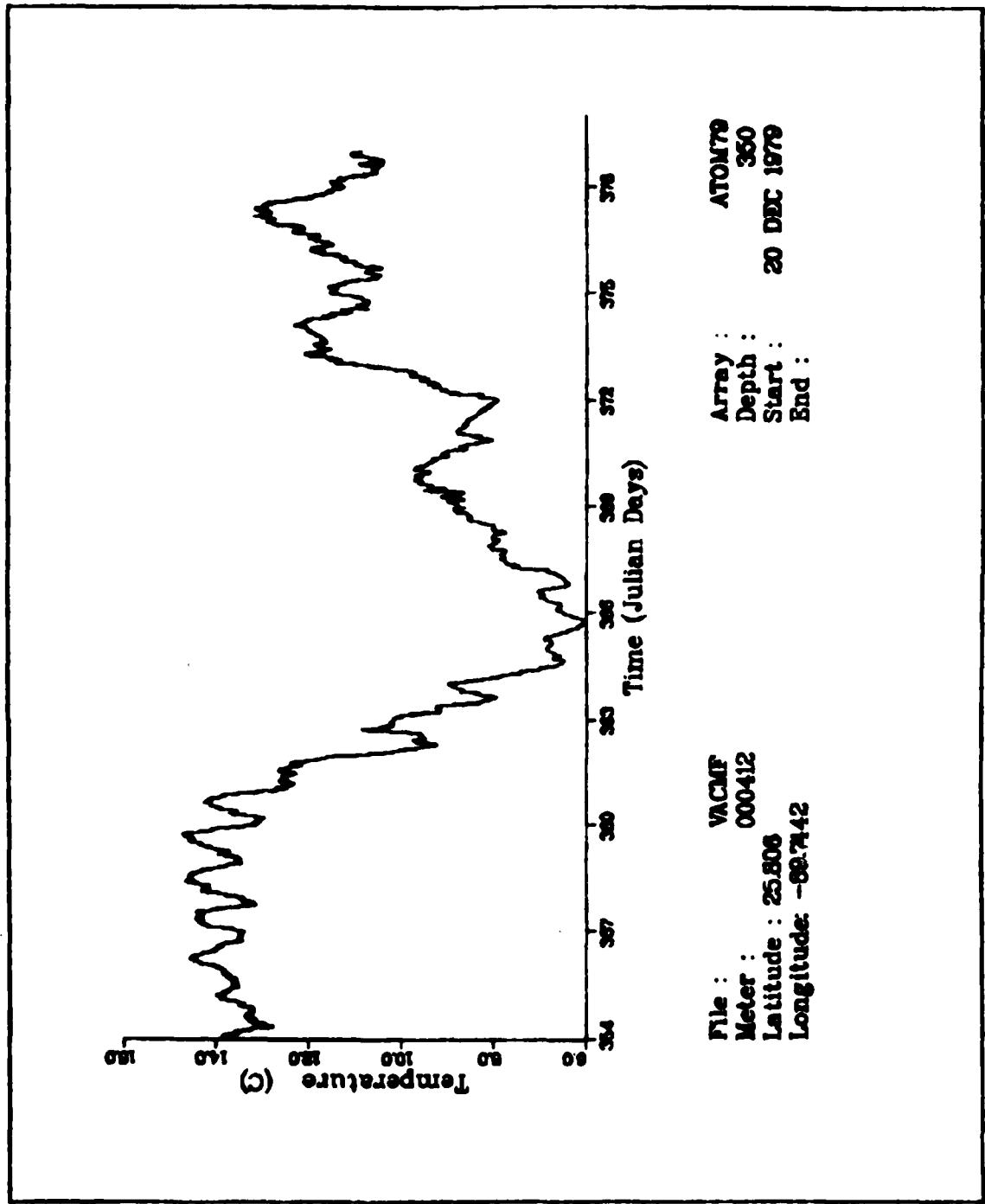


Figure 67.

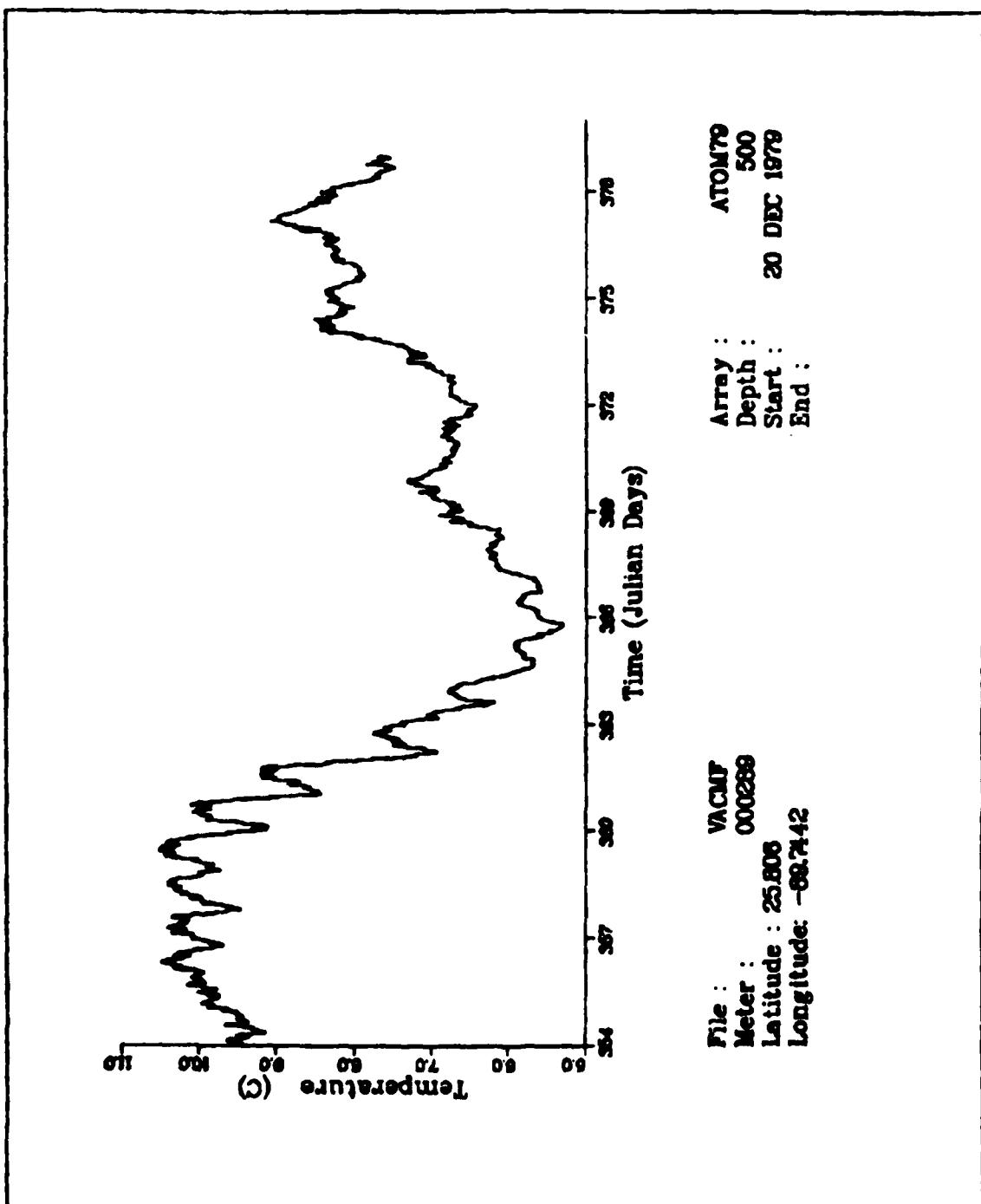


Figure 68.

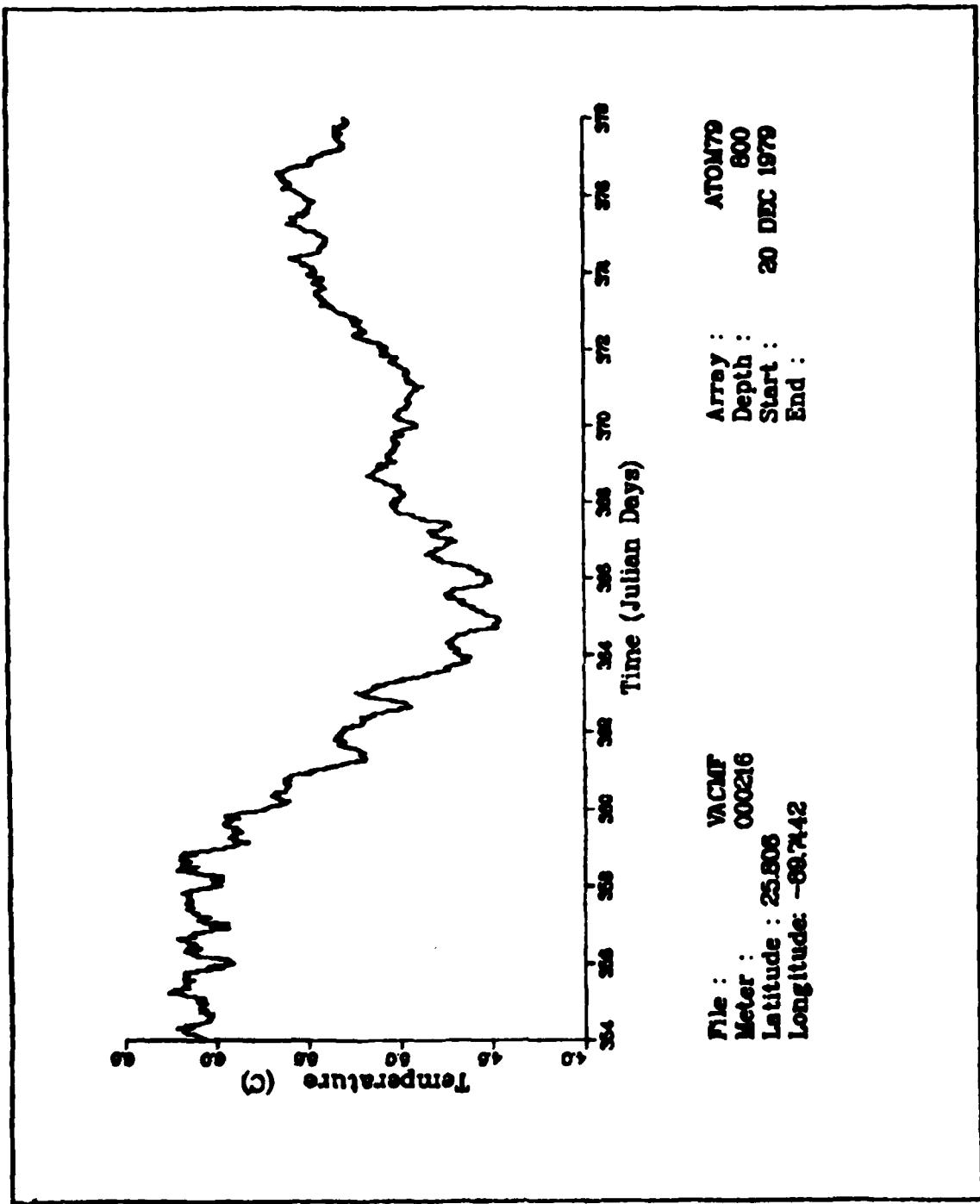


Figure 69.

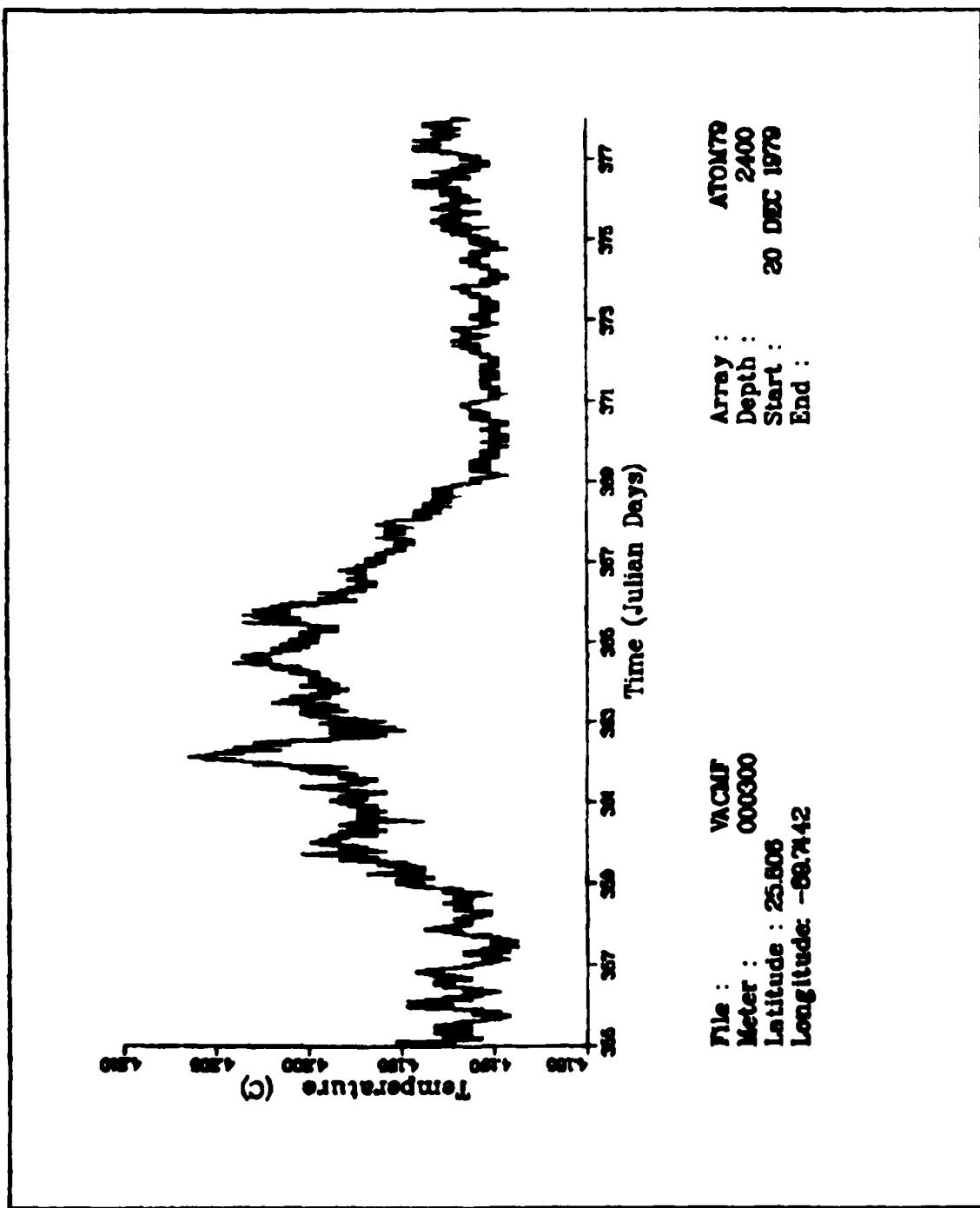
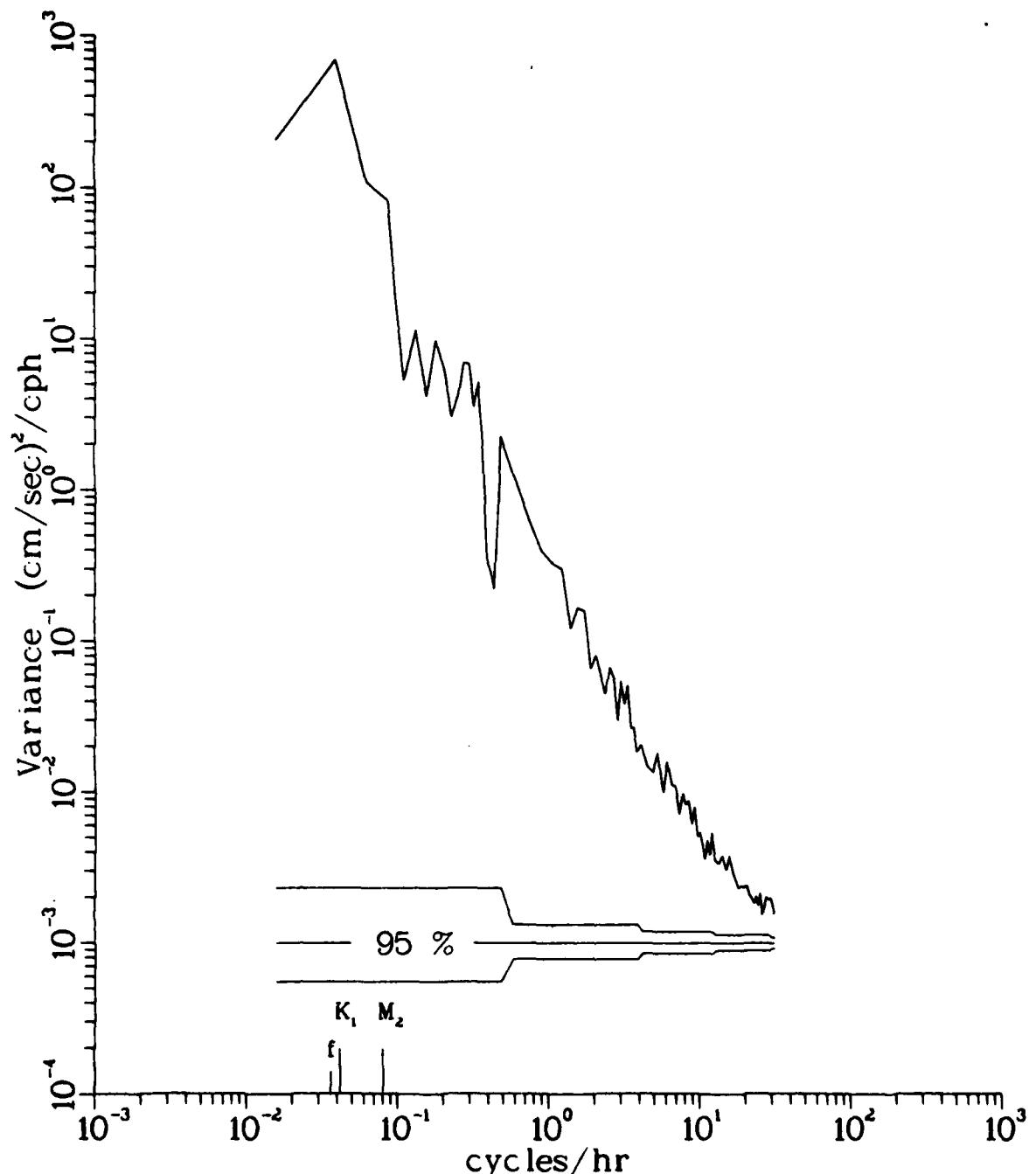


Figure 70.

CURRENT SPECTRUM



Variable : U	Array : ATOM79
File : VACMF	Depth : 100
Meter : 000407	Start : 20 DEC 1979
Lat : 25 806	End : 25 DEC 1979
Long : -89 742	

Figure 71.

CURRENT SPECTRUM

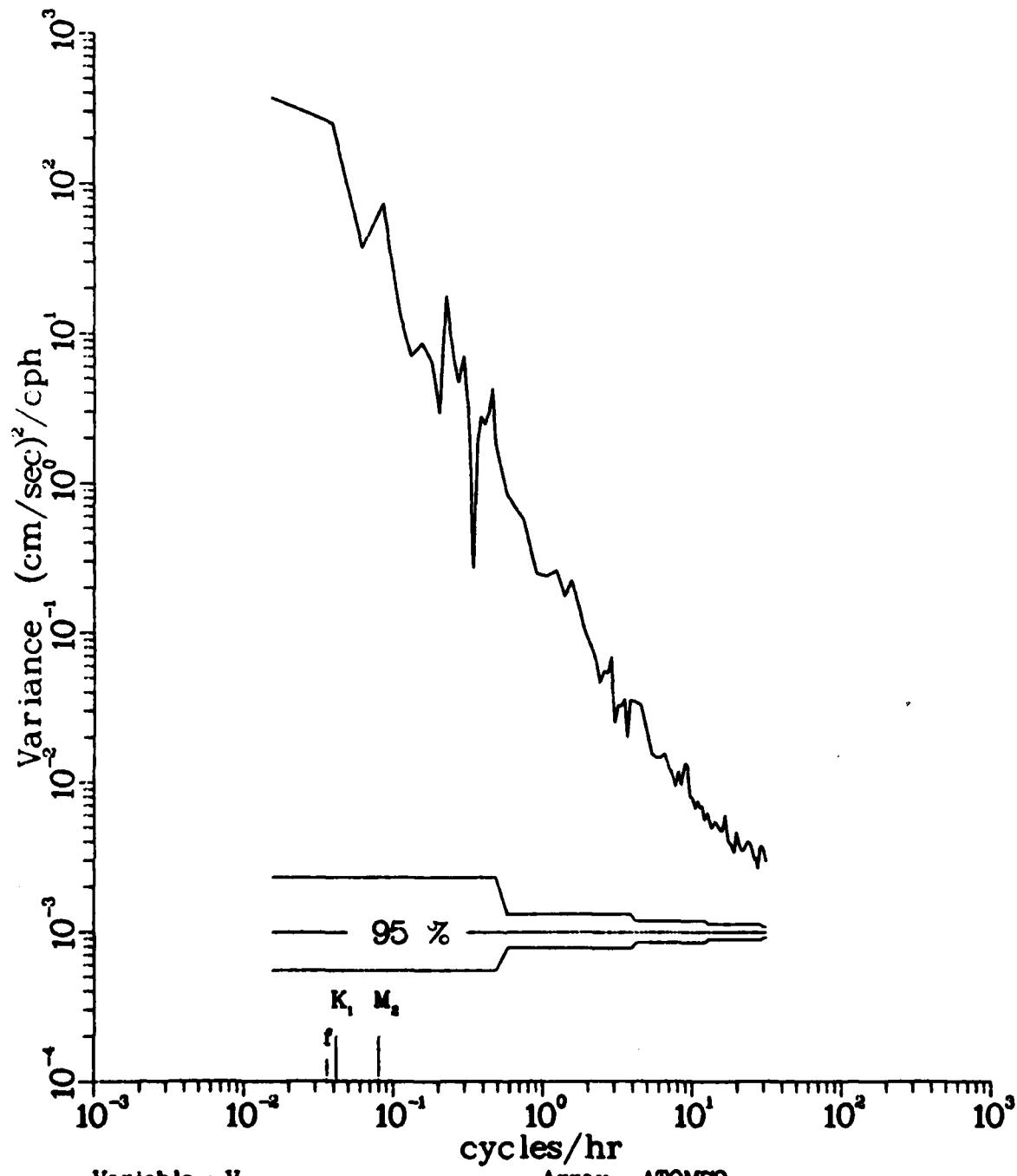


Figure 72.

ROTARY SPECTRUM

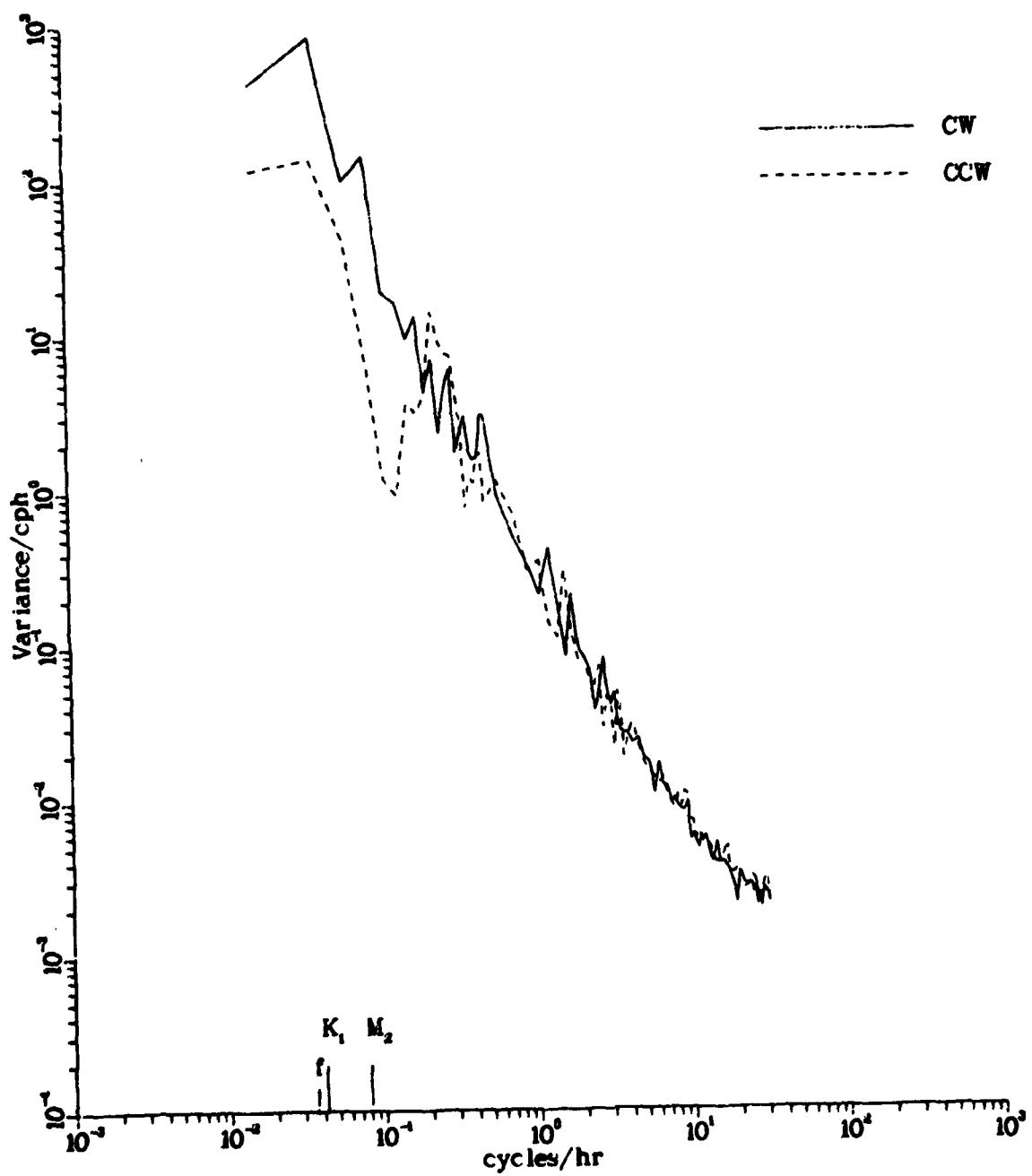
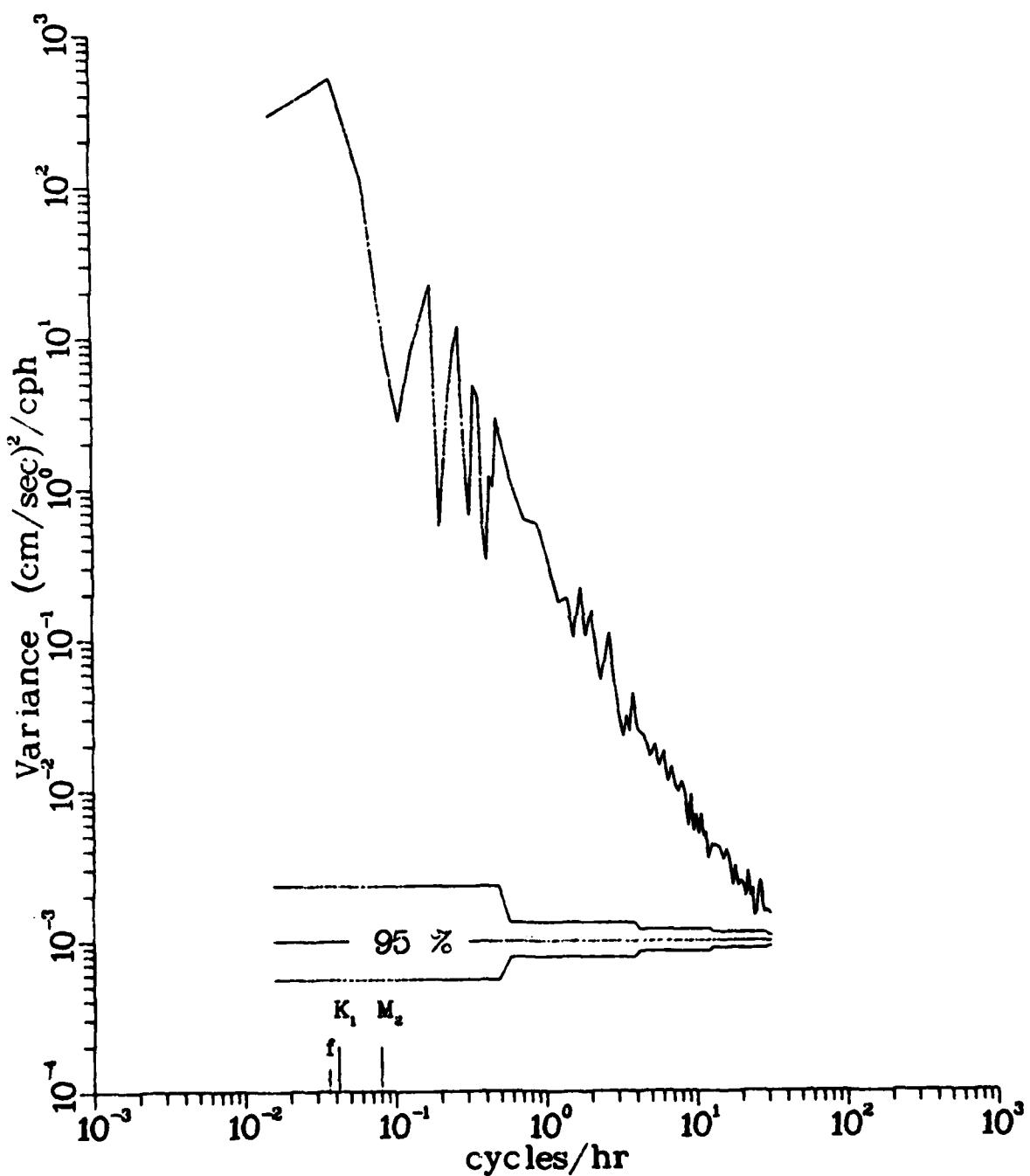


Figure 73.

CURRENT SPECTRUM

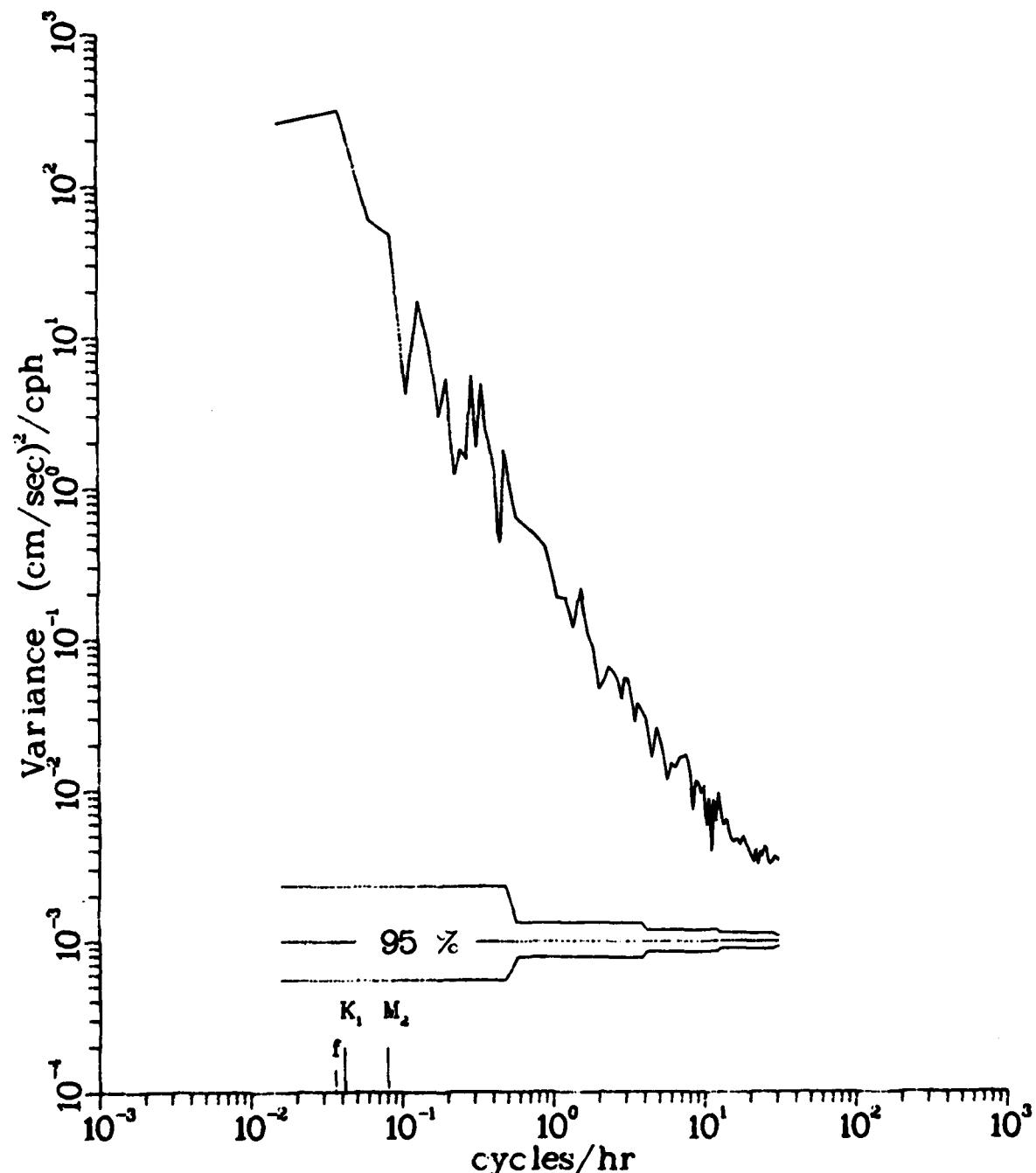


Variable : U
 File : VACMF
 Meter : 000416
 Lat. : 25.806
 Long : -89.7442

Array : ATOM79
 Depth : 116
 Start : 19 DEC 1900
 End : 24 DEC 1900

Figure 74.

CURRENT SPECTRUM

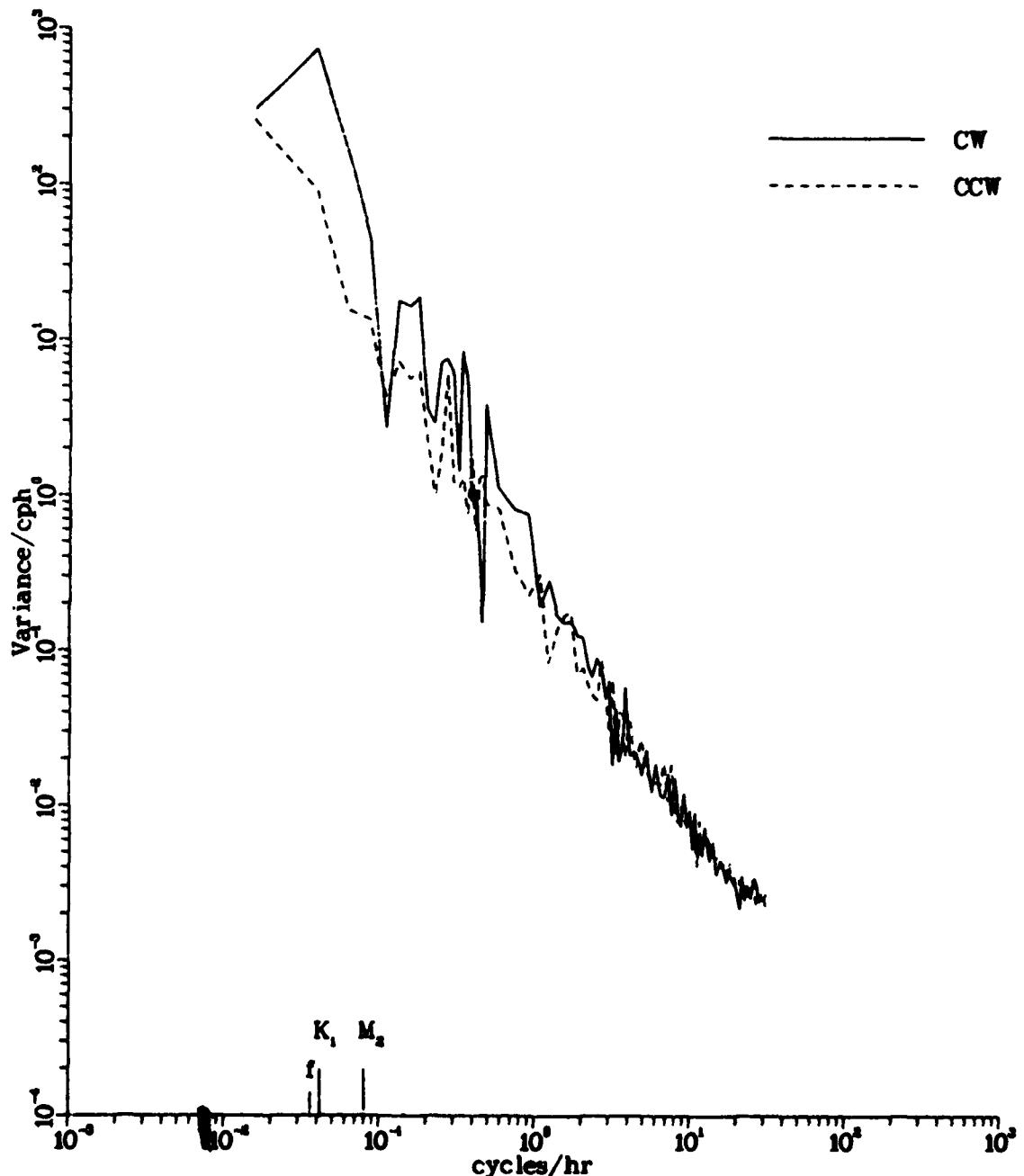


Variable : V
 File : VACMF
 Meter : 000416
 Lat. : 25.806
 Long : -89.7442

Array : ATOM79
 Depth : 116
 Start : 19 DEC 1900
 End : 24 DEC 1900

Figure 75.

ROTARY SPECTRUM

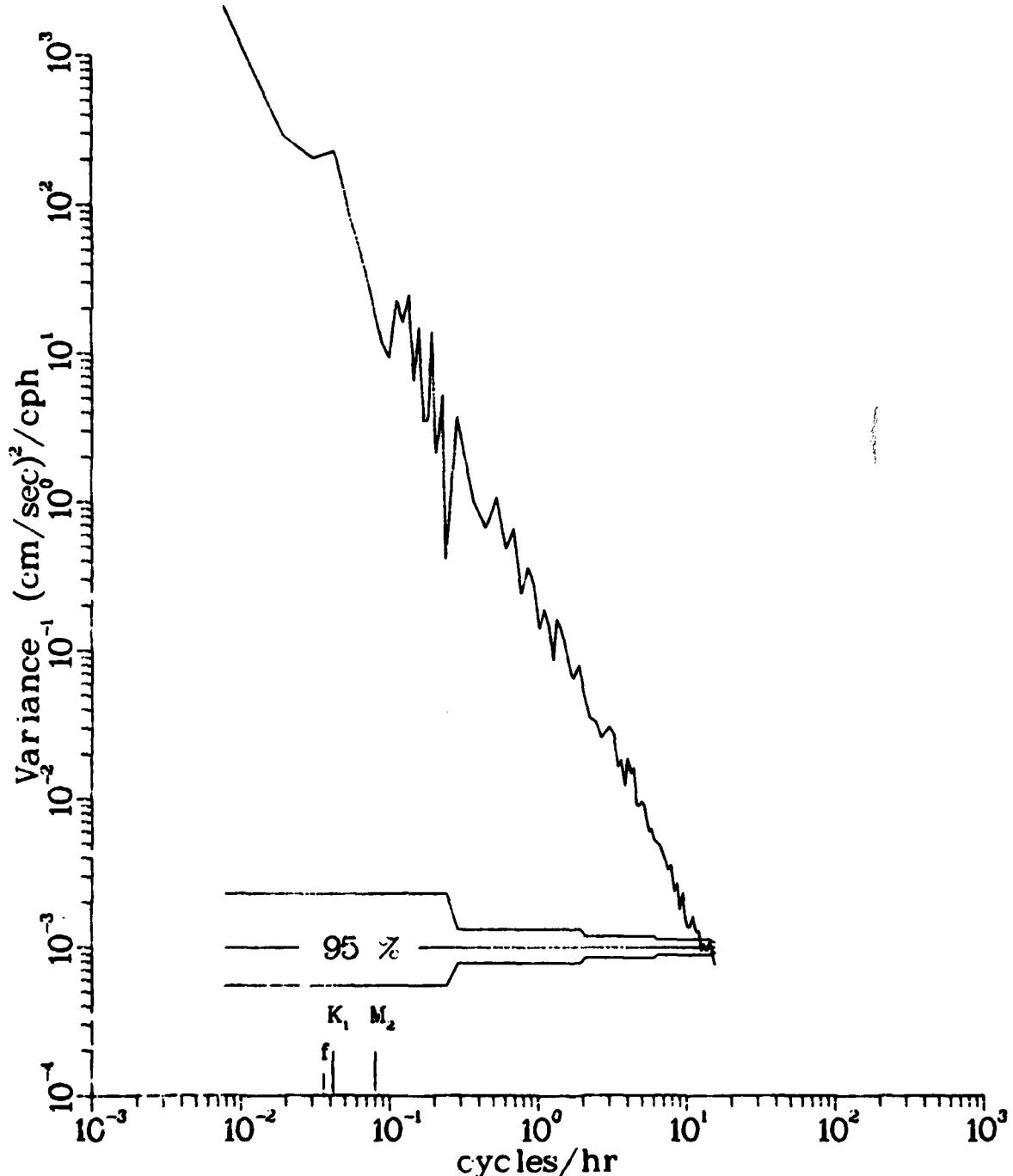


Variable : U
 Depth : 116
 Meter : 000416
 Lat. : 25.806
 Long : -89.7442

Variable : V
 Depth : 116
 Meter : 000416
 Lat. : 25.806
 Long : -89.7442

Figure 76.

CURRENT SPECTRUM



Variable U
File VACMF
Meter 000296
Lat. 25.806
Long -89.742

Array ATOM?9
Depth 214
Start 19 DEC 1900
End 29 DEC 1900

Figure 77.

CURRENT SPECTRUM

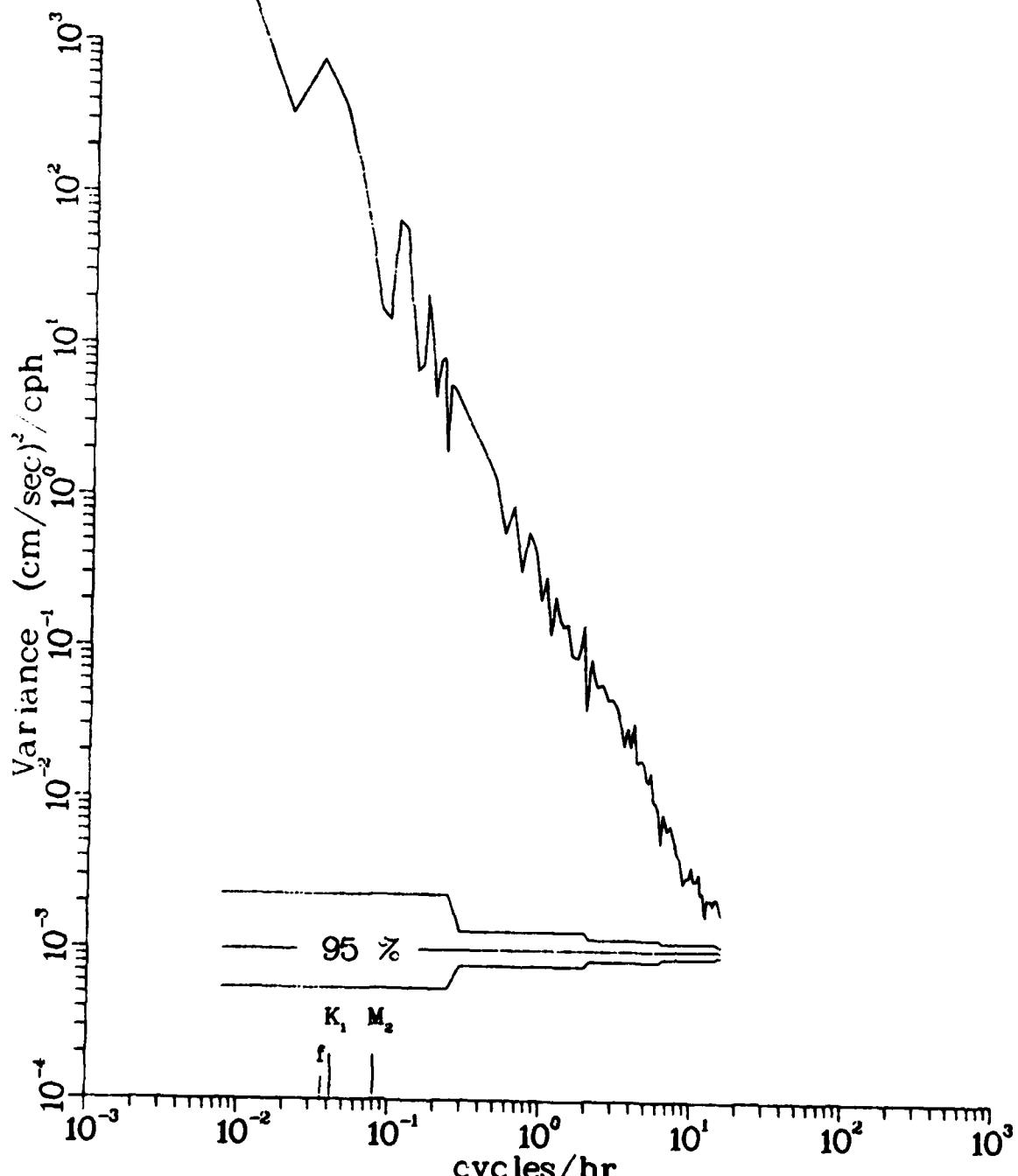
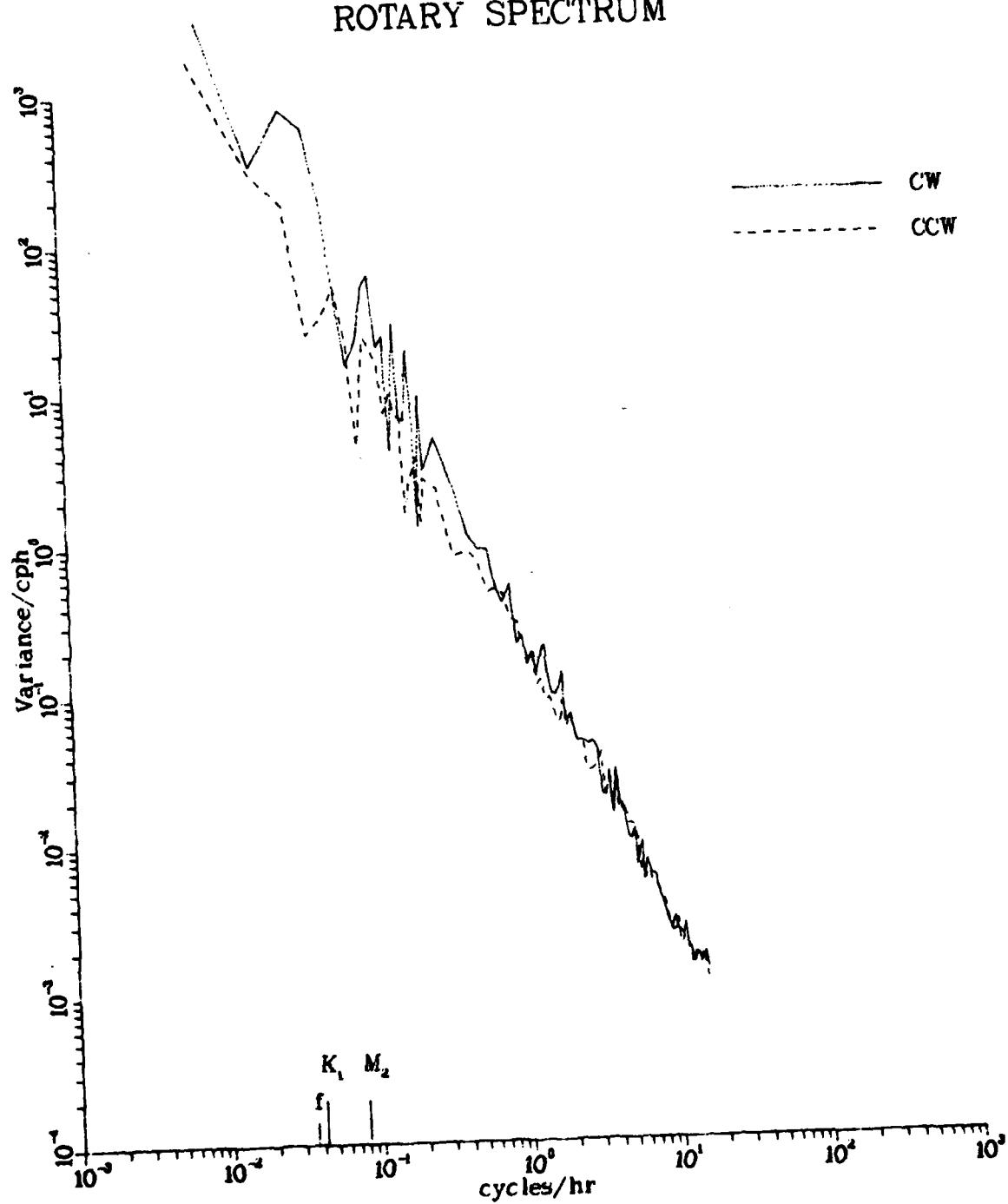


Figure 78.

ROTARY SPECTRUM



Variable . U
 Depth : 214
 Meter : 000296
 Lat. : 25.806
 Long : -89.7142

Variable . V
 Depth : 214
 Meter : 000296
 Lat. : 25.806
 Long : -89.7142

Figure 79.

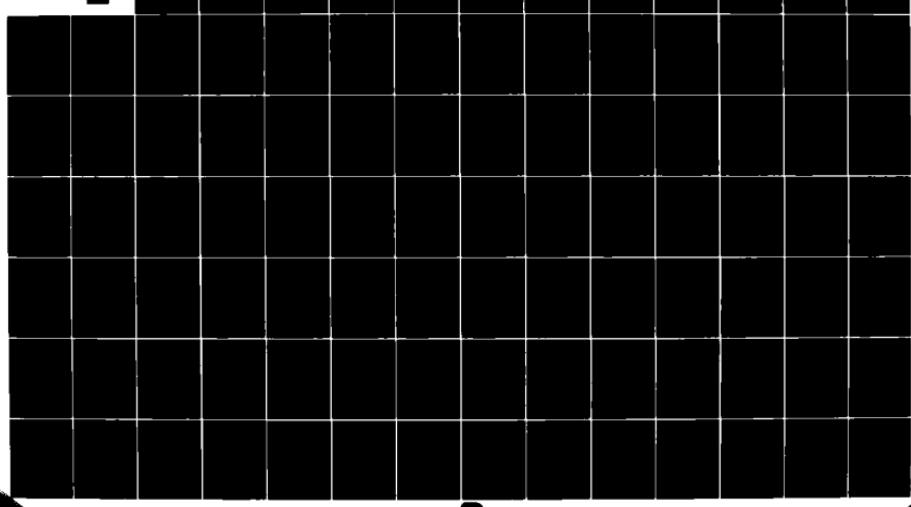
AD-A096 918 NAVAL OCEAN RESEARCH AND DEVELOPMENT ACTIVITY NSTL S--ETC P/B 8/3
A COMPREHENSIVE GRAPHICAL REPRESENTATION OF DATA OBTAINED IN TN--ETC
OCT 80 K D SAUNDERS, A W GREEN, M T BERGIN

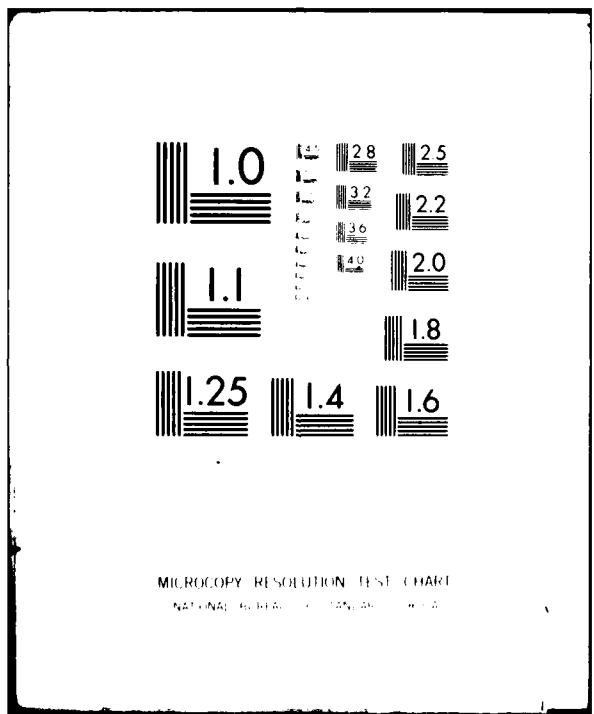
UNCLASSIFIED

NORDA-TN-85

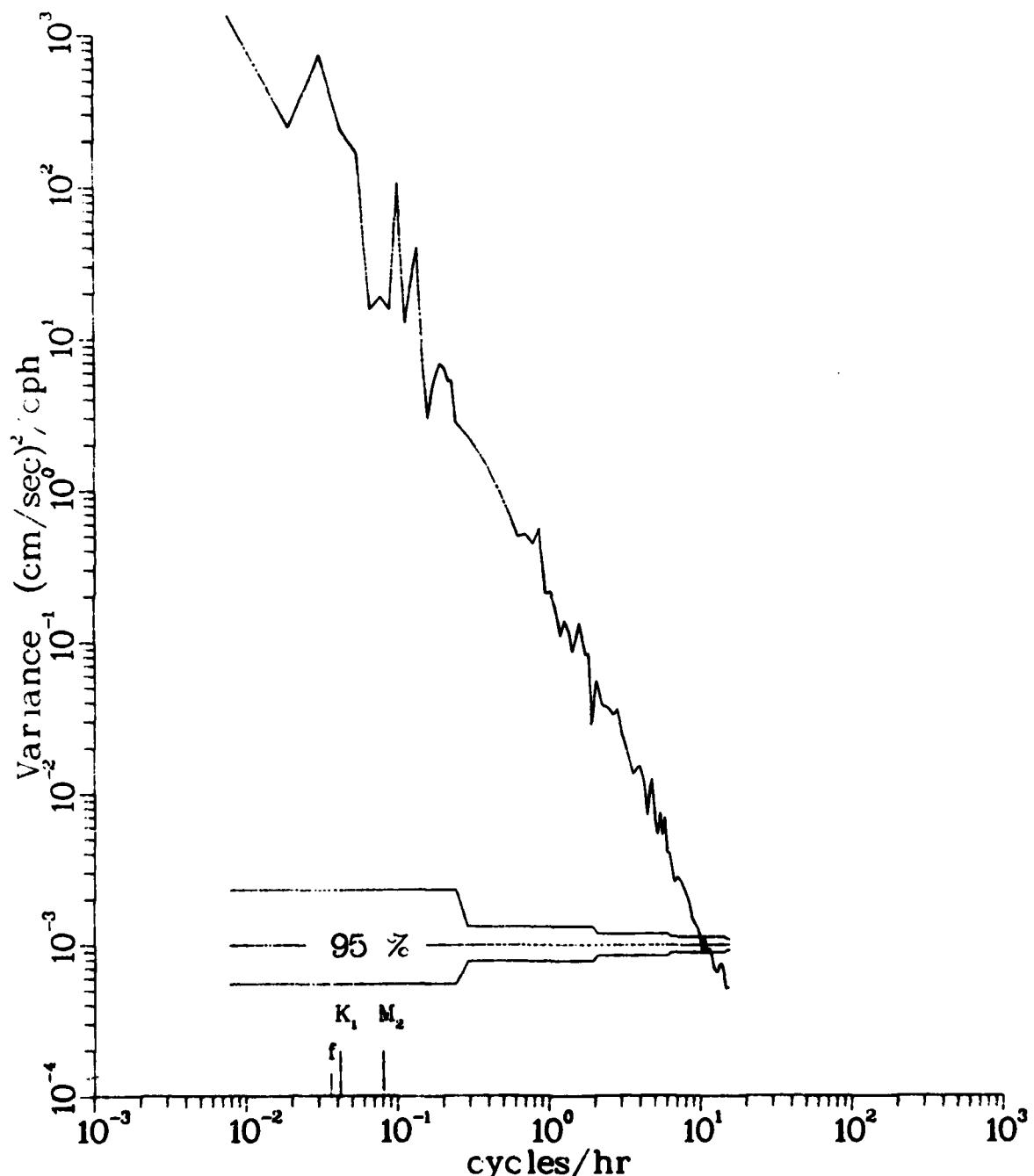
NL

2 1/2 7
20000





CURRENT SPECTRUM

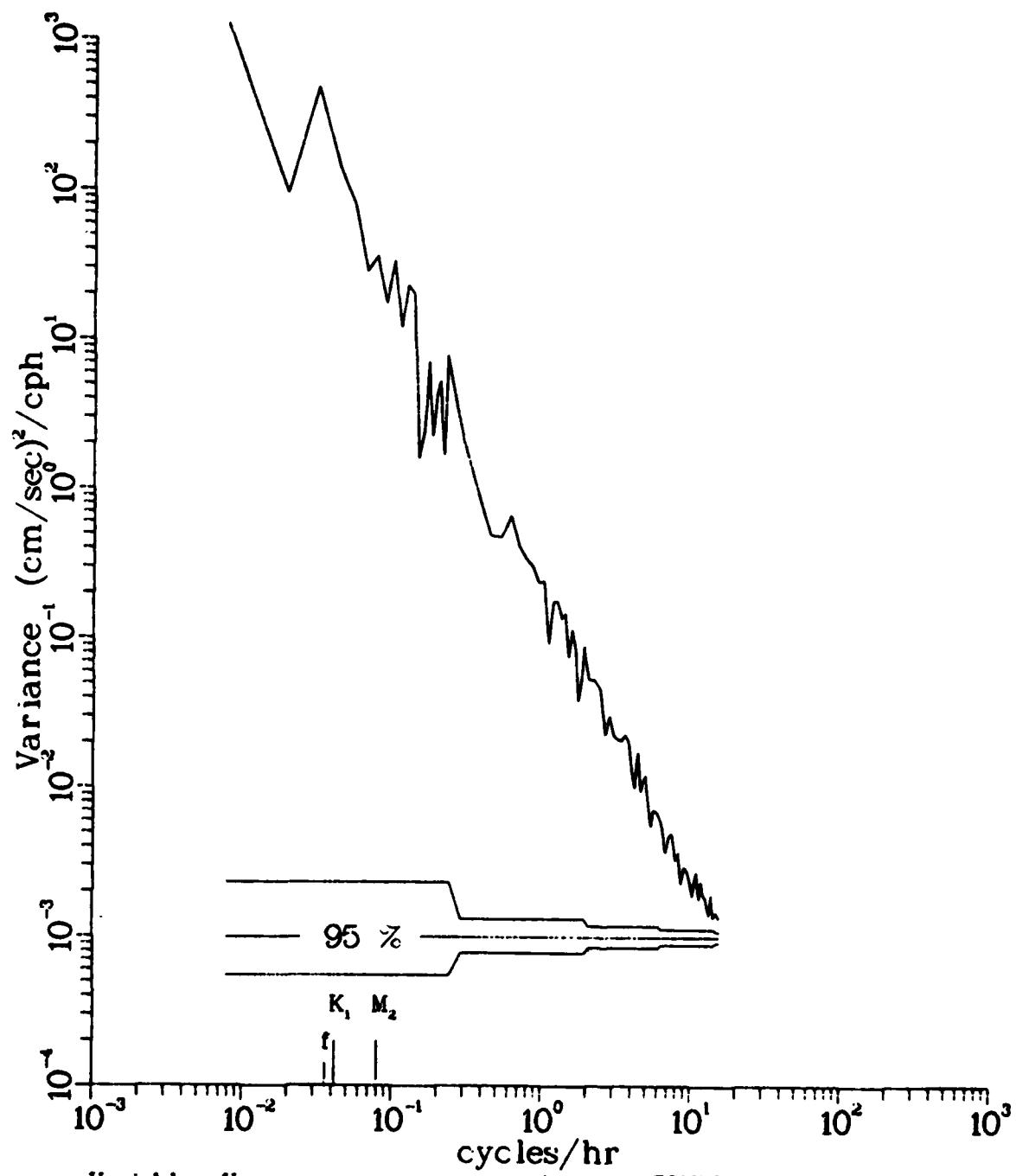


Variable U
File VACMF
Meter 000412
Lat. 25.806
Long -89.742

Array ATOM79
Depth 350
Start 19 DEC 1900
End 29 DEC 1900

Figure 80.

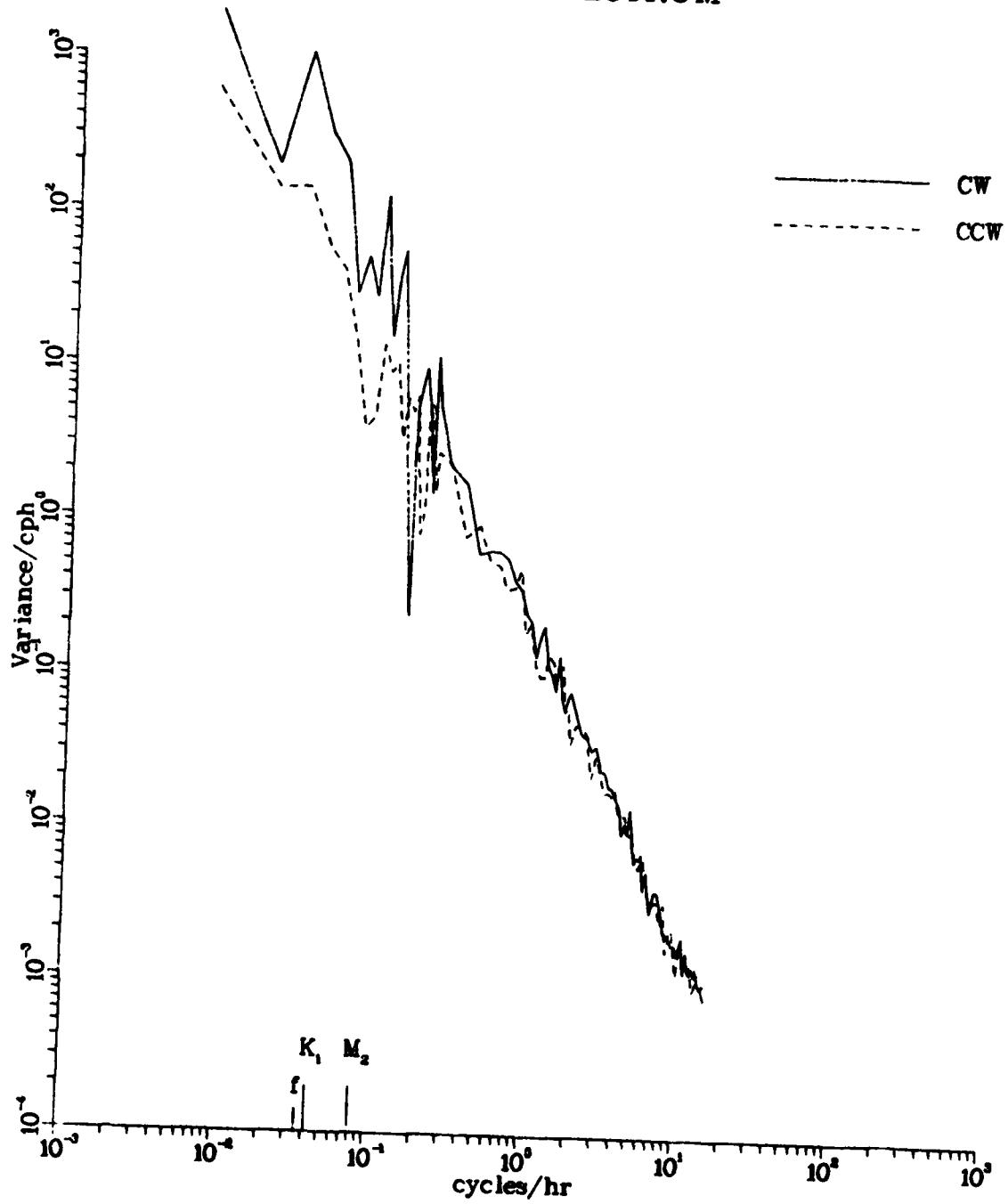
CURRENT SPECTRUM



Variable : V	Array : ATOM79
File : VACMF	Depth : 350
Meter : 000412	Start : 19 DEC 1900
Lat. : 25 806	End : 29 DEC 1900
Long : -89 7442	

Figure 81.

ROTARY SPECTRUM



Variable : U
 Depth 350
 Meter 000412
 Lat. 25.808
 Long -89.742

Variable : V
 Depth 350
 Meter 000412
 Lat. 25.808
 Long -89.742

Figure 82.

CURRENT SPECTRUM

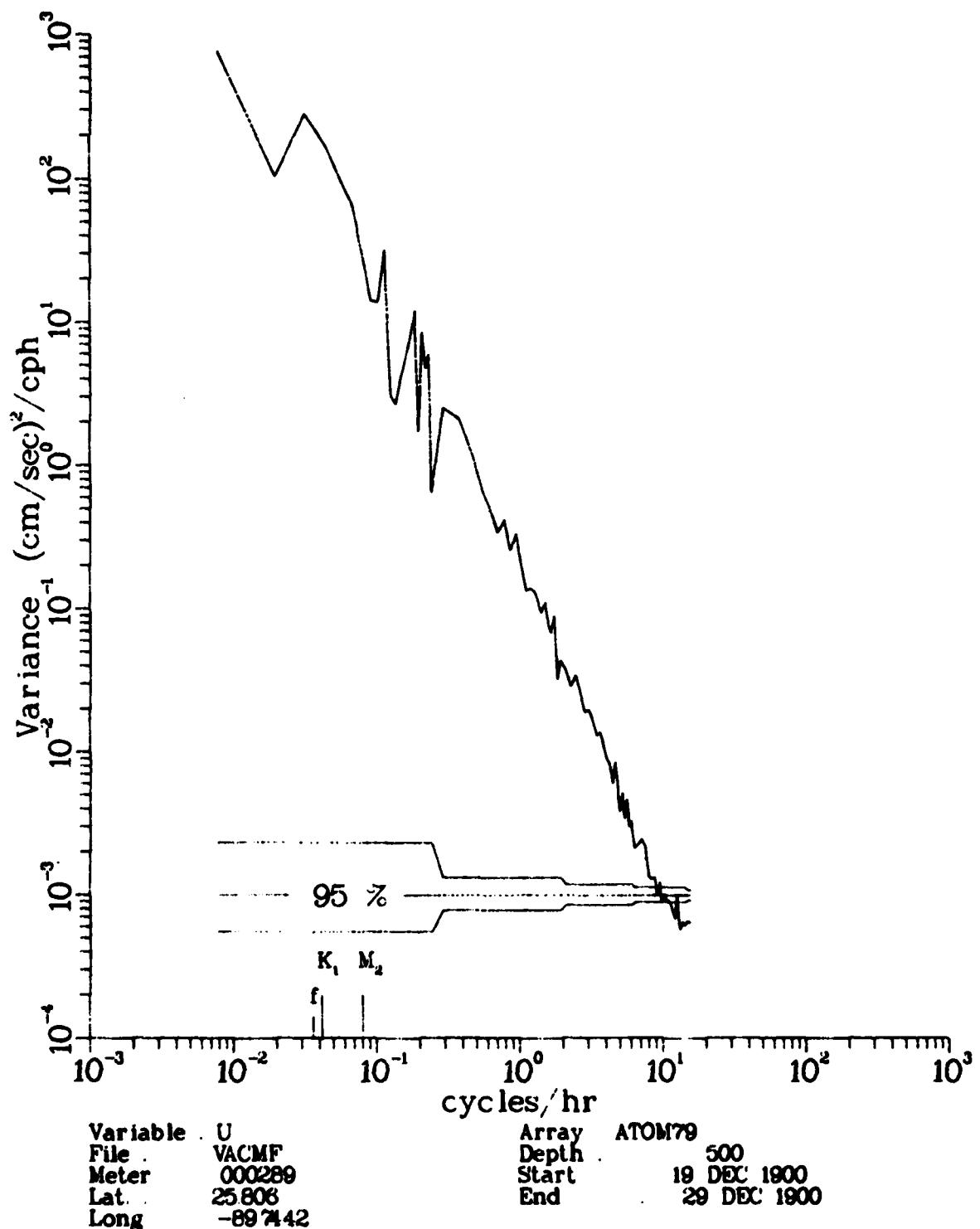
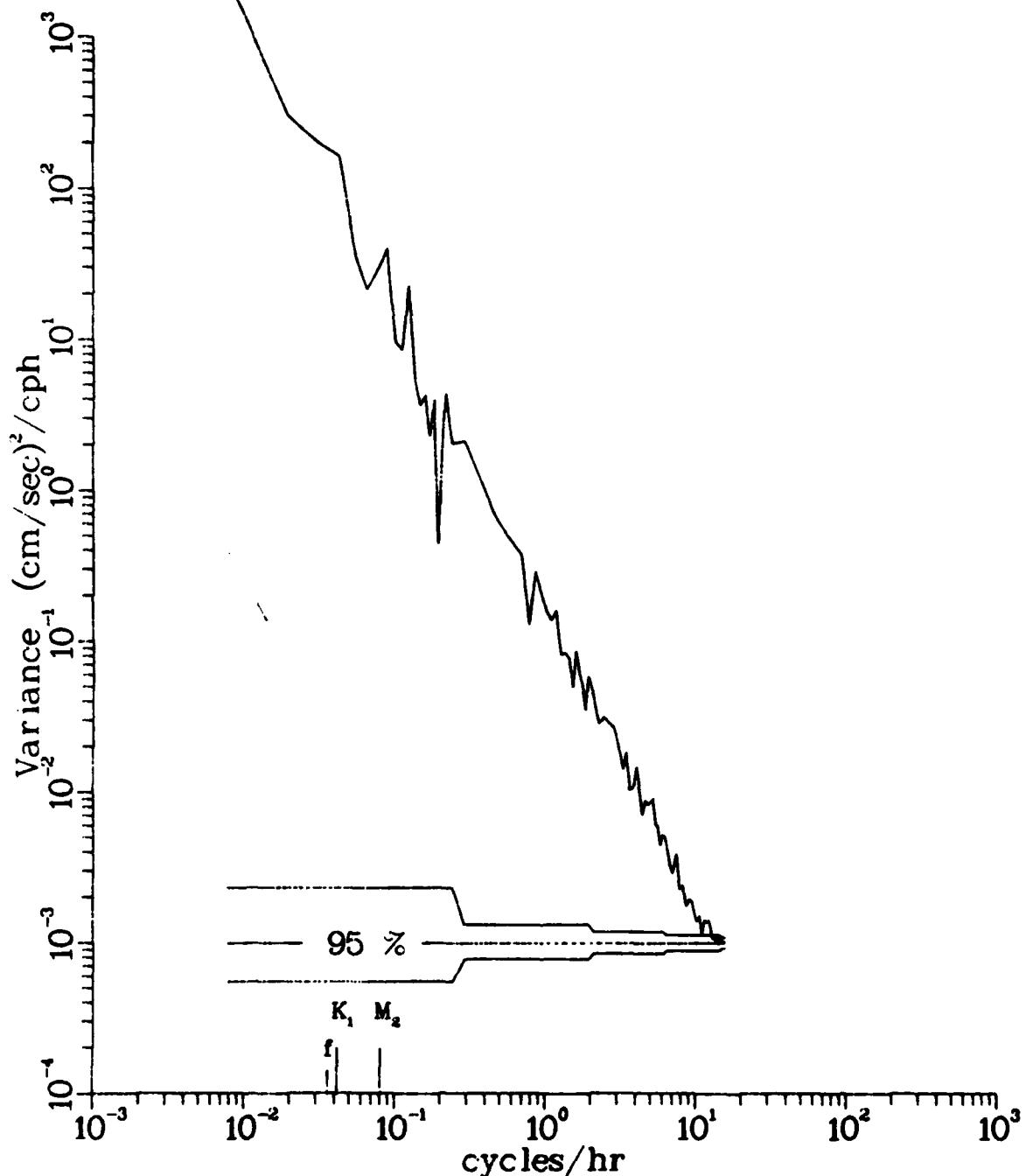


Figure 83.

CURRENT SPECTRUM

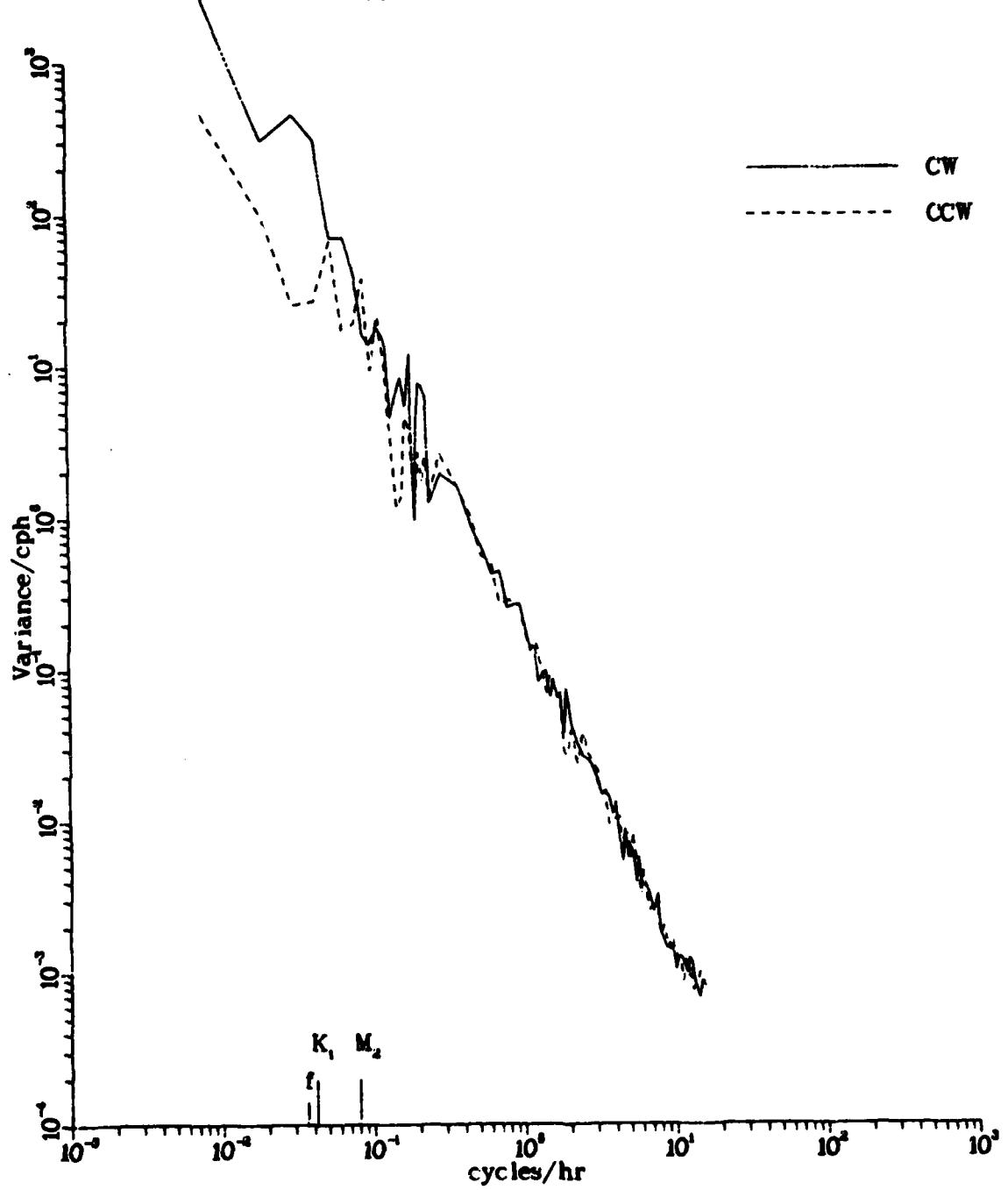


Variable: V
 File: VACMF
 Meter: 000289
 Lat.: 25.806
 Long.: -89.7442

Array: ATOM?9
 Depth: 500
 Start: 19 DEC 1900
 End: 29 DEC 1900

Figure 84.

ROTARY SPECTRUM



Variable : U
 Depth : 500
 Meter : 000289
 Lat. : 25.808
 Long : -89.742

Variable : V
 Depth : 500
 Meter : 000289
 Lat. : 25.808
 Long : -89.742

Figure 85.

CURRENT SPECTRUM

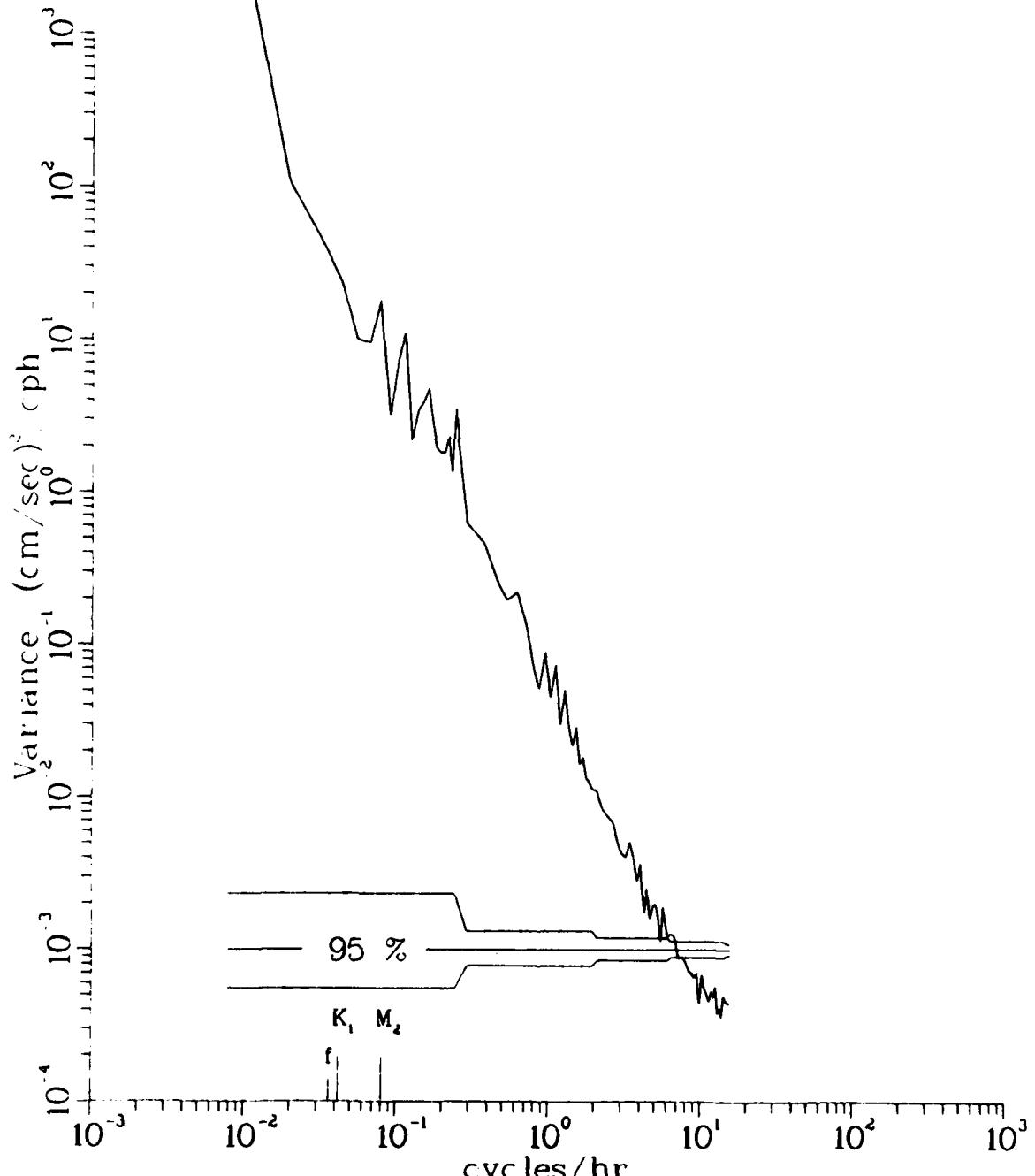


Figure 86.

CURRENT SPECTRUM

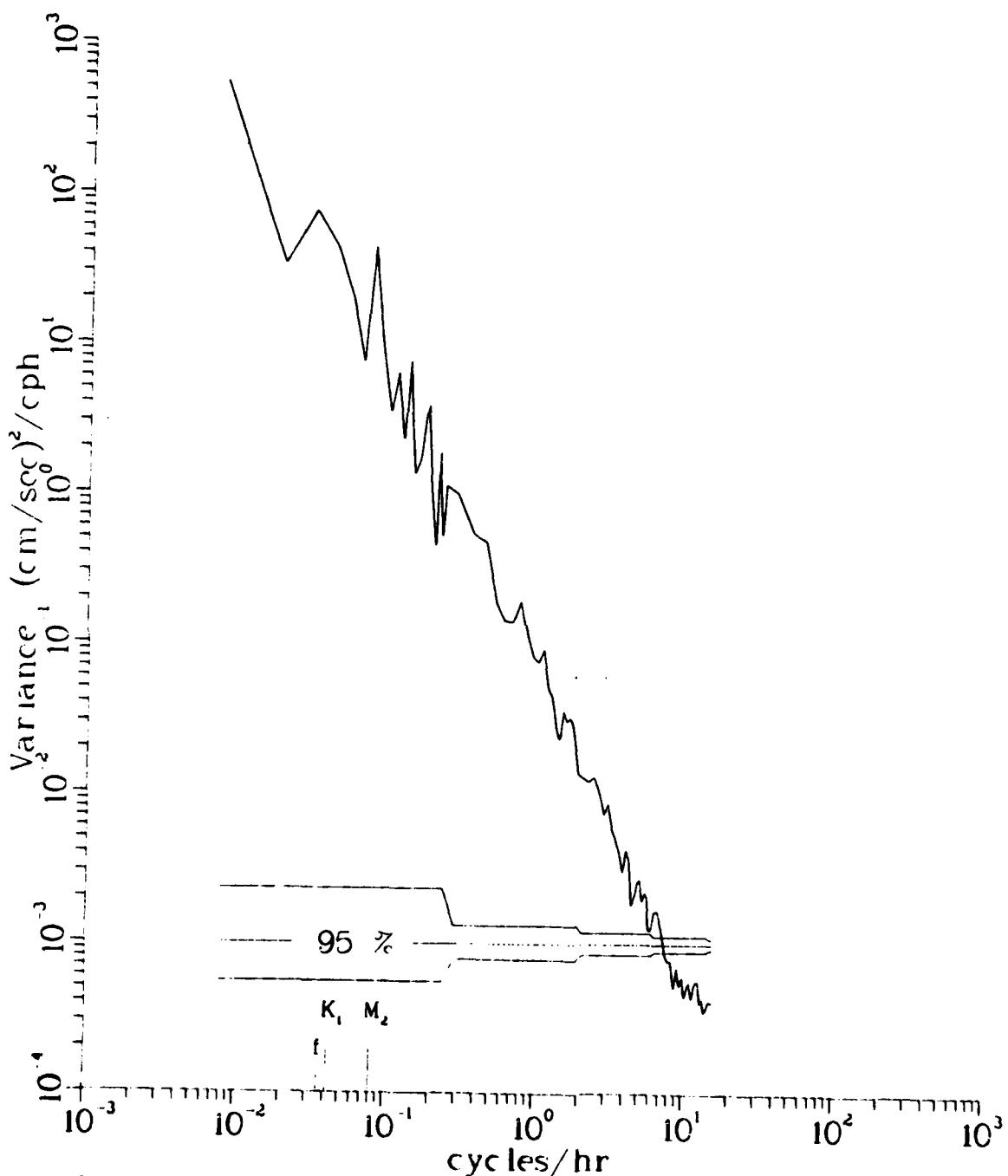
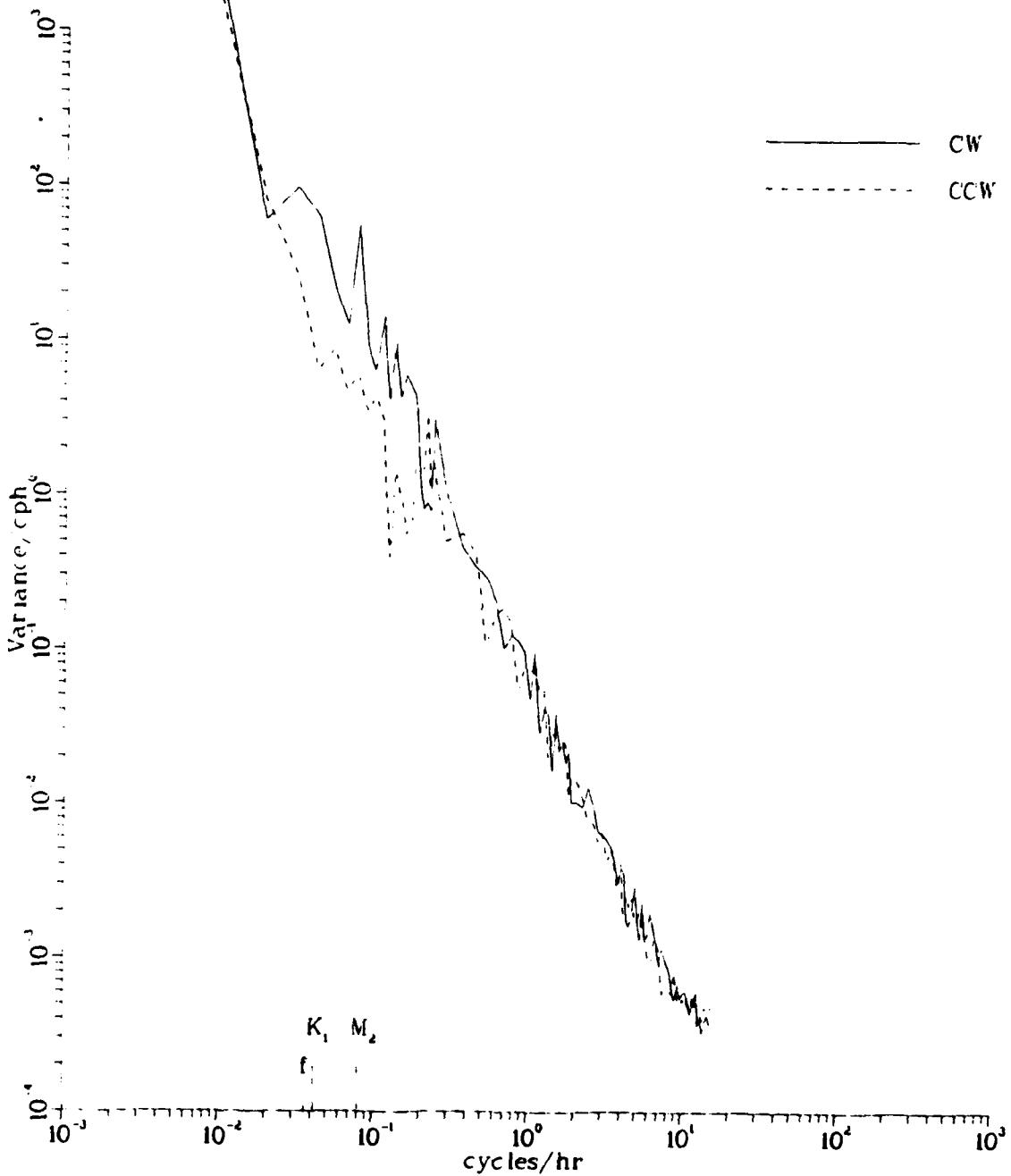


Figure 87.

ROTARY SPECTRUM



Variable	U
Depth Meter	1400
Lat	000298
Long	25 806
	-89 7442

Variable	V
Depth Meter	1400
Lat	000298
Long	25 806
	-89 7442

Figure 88.

CURRENT SPECTRUM

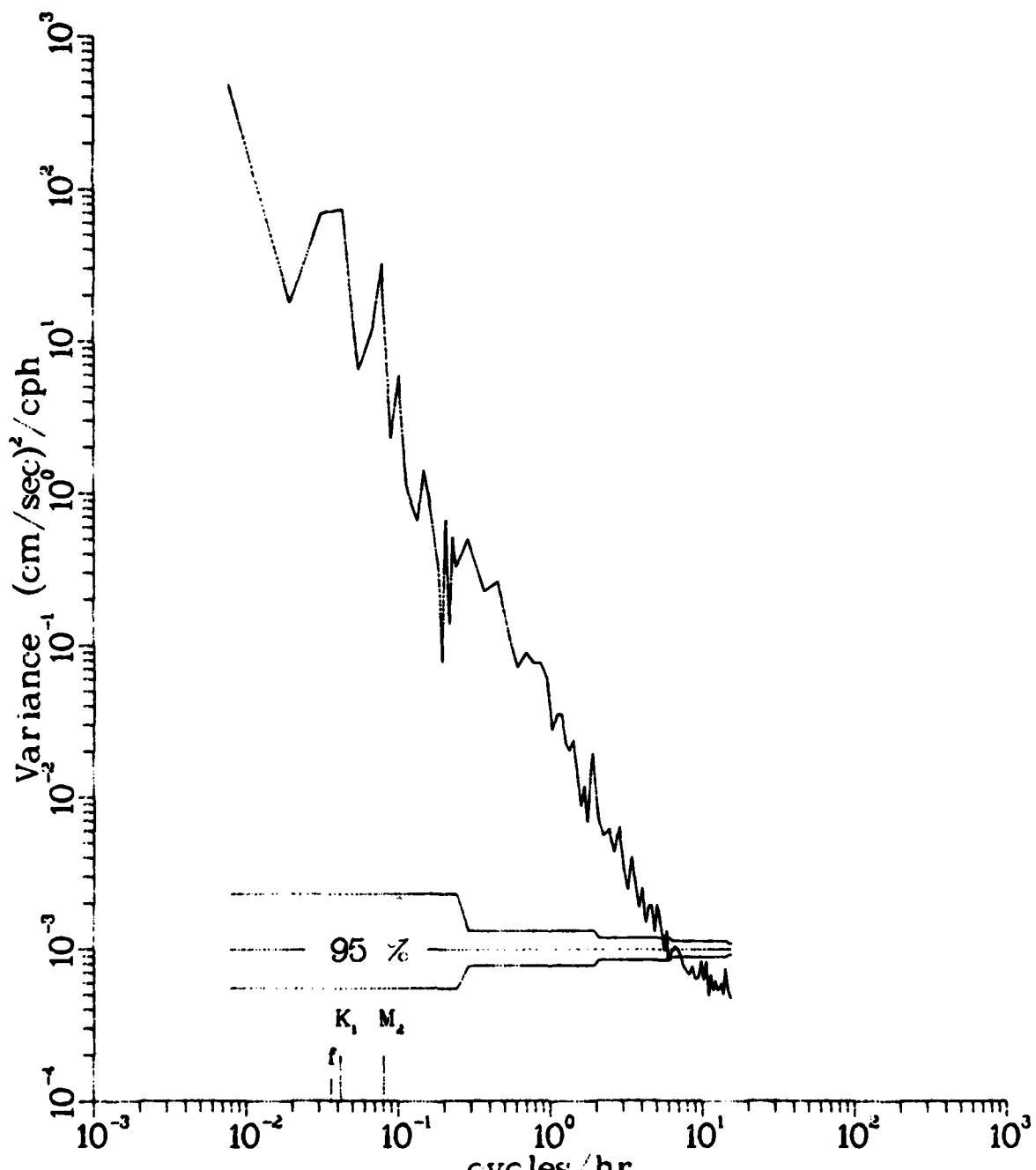
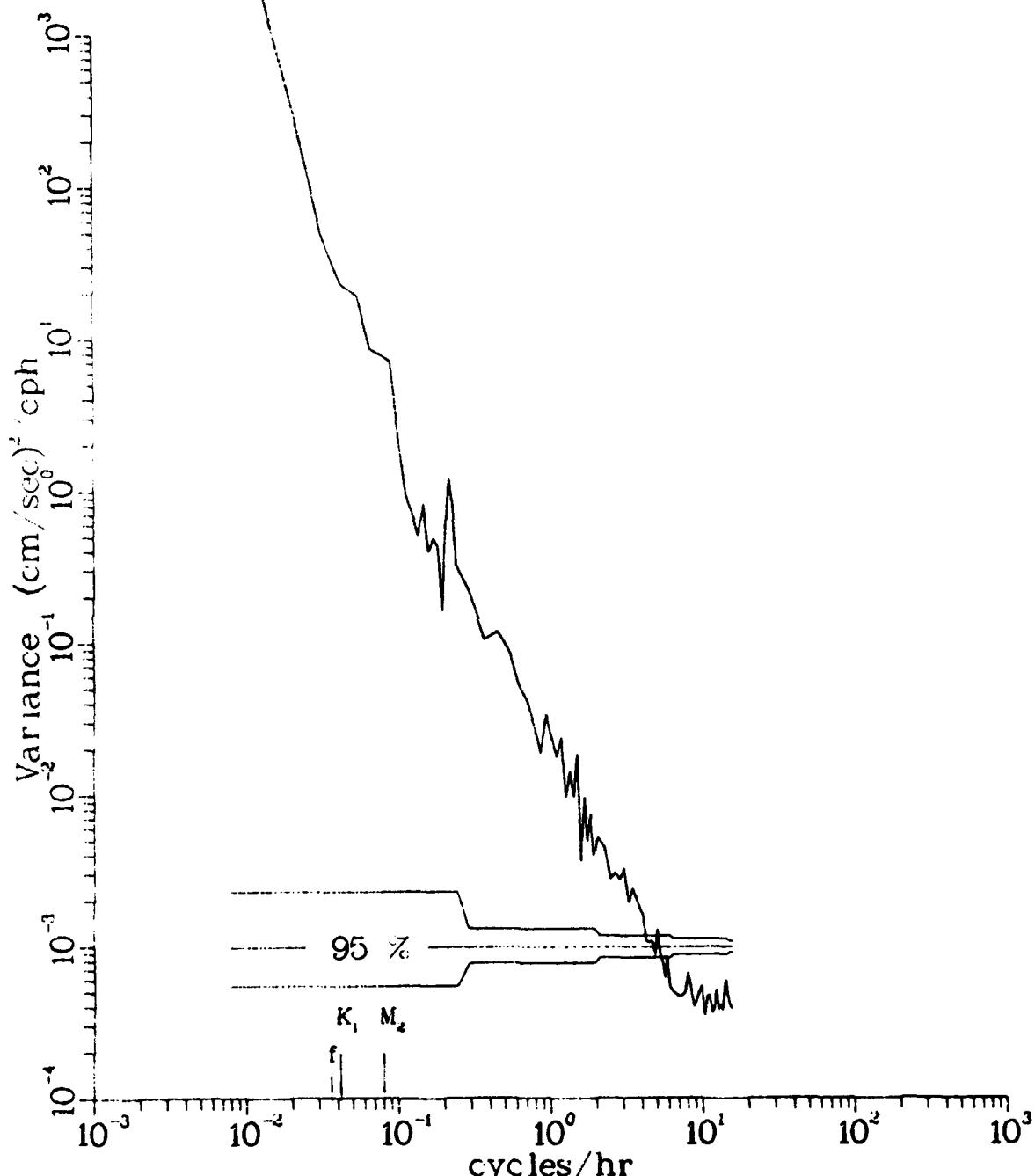


Figure 89.

CURRENT SPECTRUM

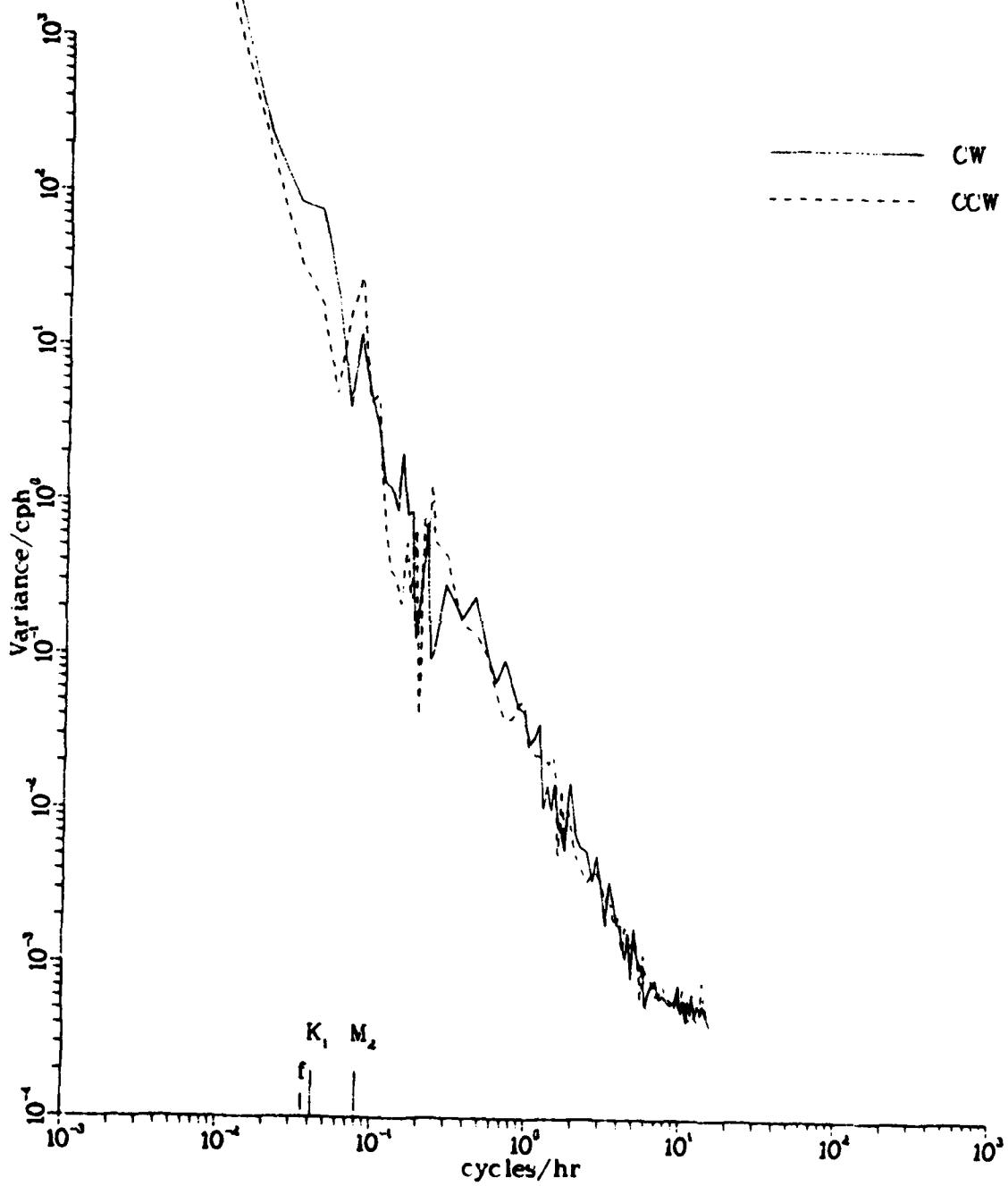


Variable V
 File VACMF
 Meter 000300
 Lat 25.808
 Long -89.742

Array ATOM79
 Depth 2400
 Start 19 DEC 1900
 End 29 DEC 1900

Figure 90.

ROTARY SPECTRUM

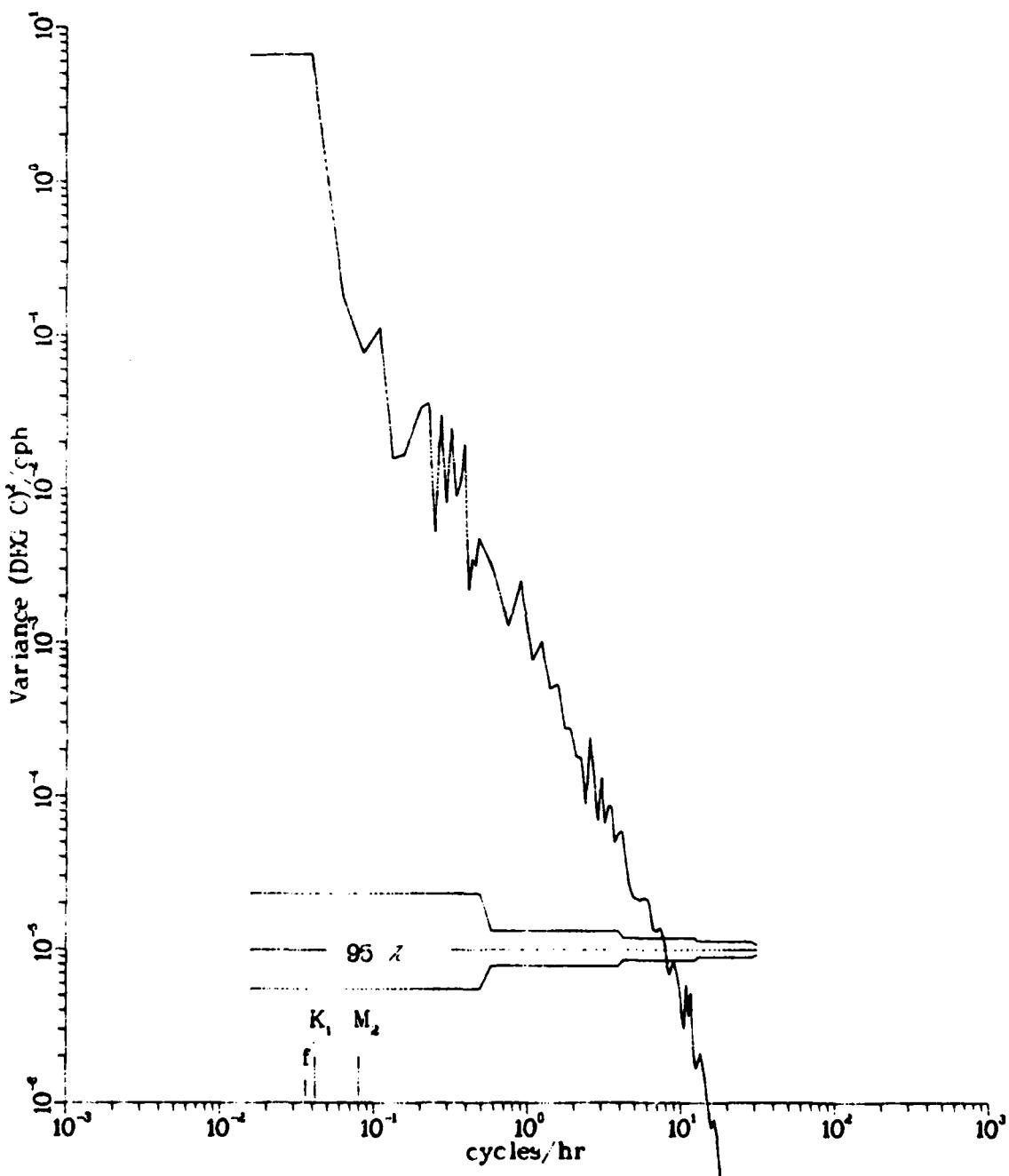


Variable U
 Depth 2400
 Meter 000300
 Lat 25 806
 Long -89 7142

Variable V
 Depth 2400
 Meter 000300
 Lat 25 806
 Long -89 7142

Figure 91.

TEMPERATURE SPECTRUM



Variable	T	Array	ATOM79
File	VACMF	Depth	100
Meter	000407	Start	19 DEC 1900
Lat	25 806	End	24 DEC 1900
Long	-89 742		

Figure 92.

TEMPERATURE SPECTRUM

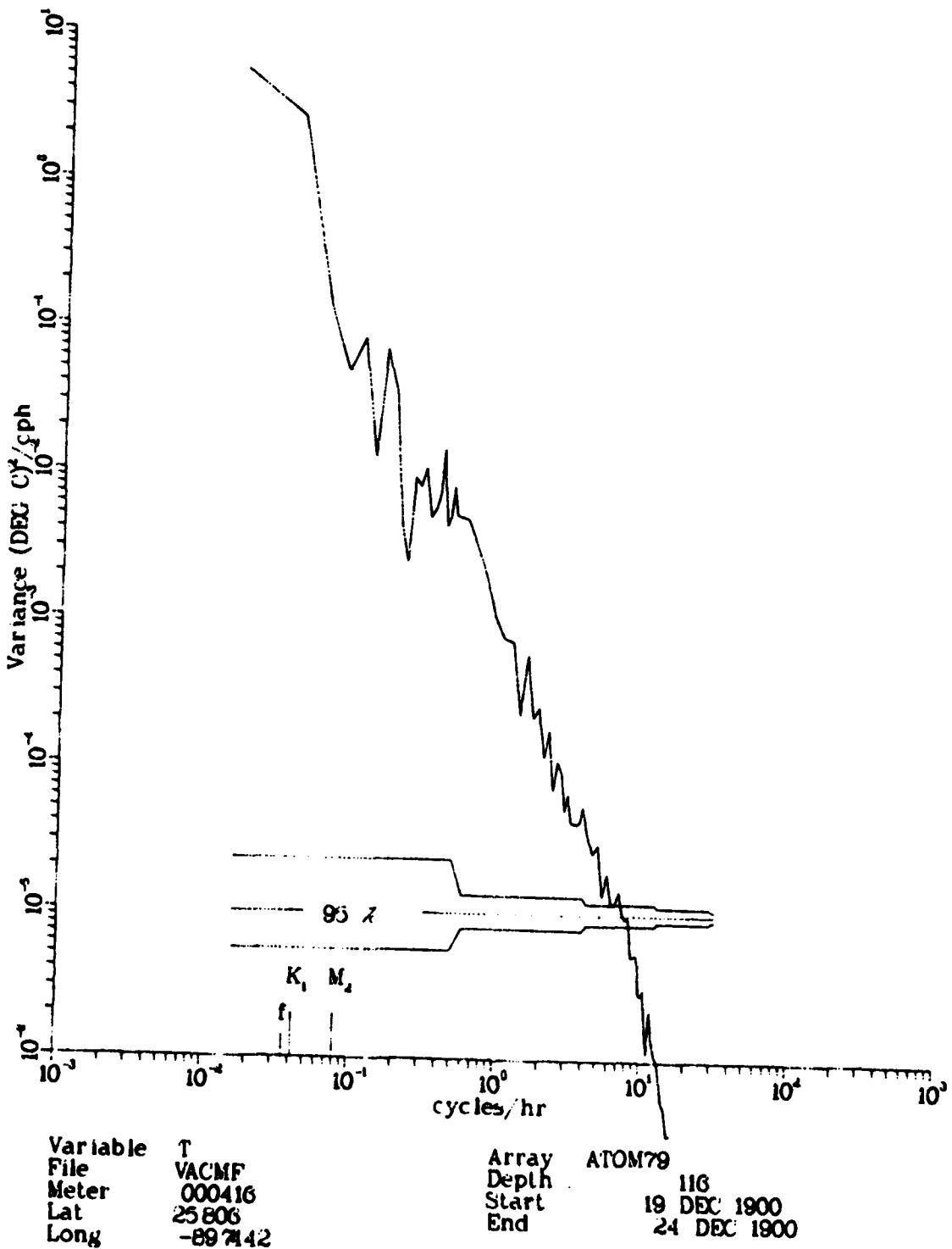
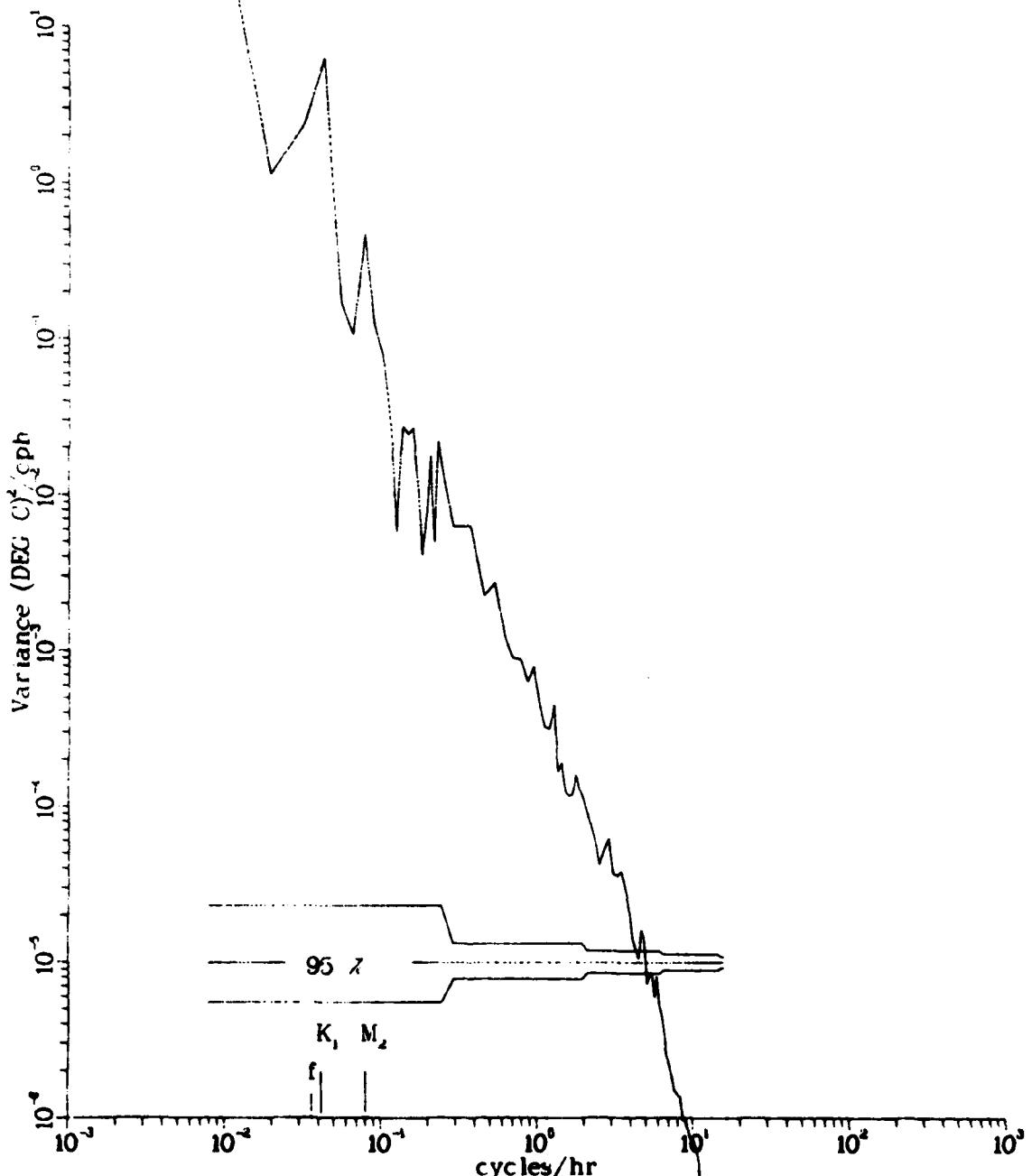


Figure 93.

TEMPERATURE SPECTRUM

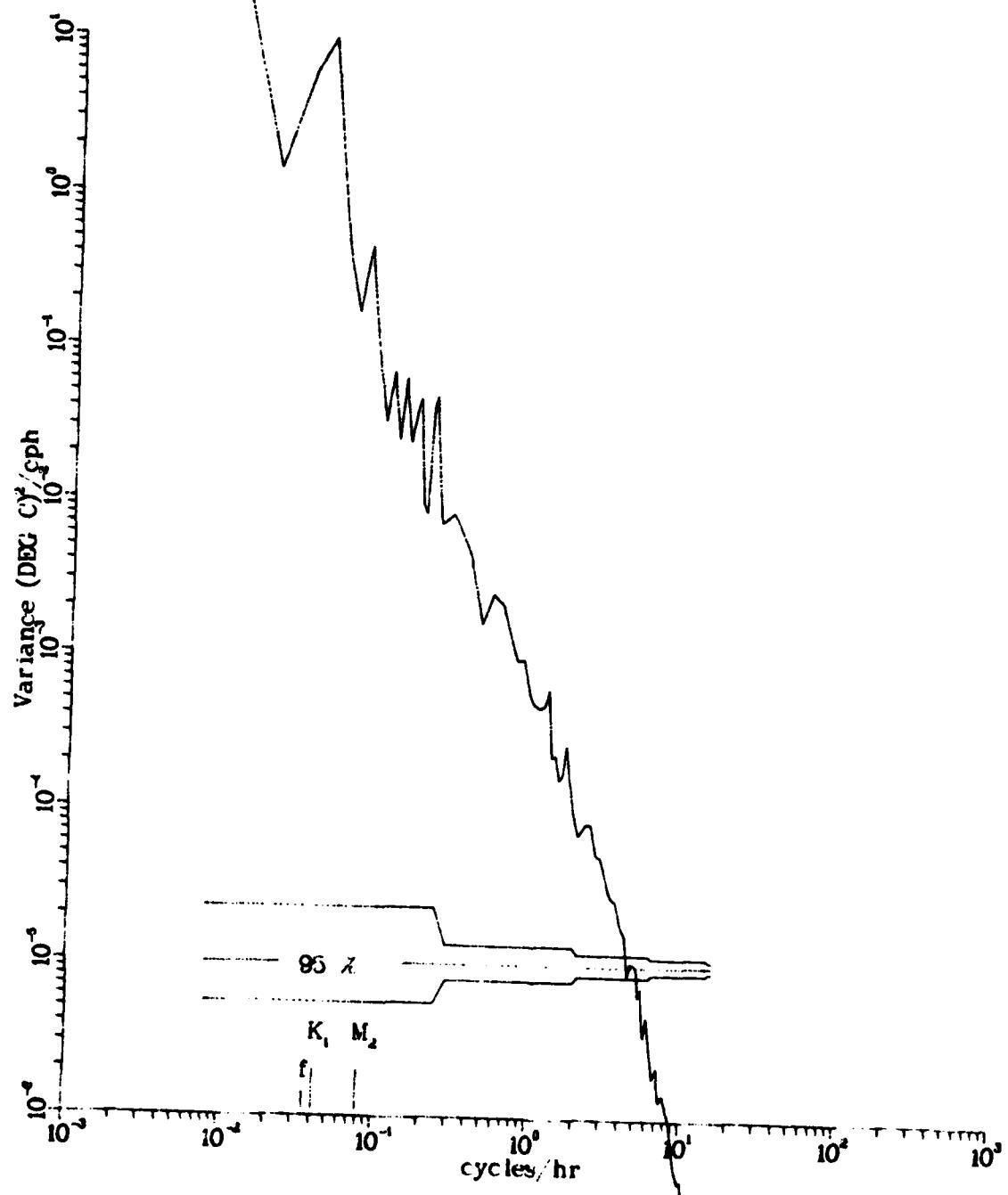


Variable T
 File VACMF
 Meter 000296
 Lat 25.806
 Long -89.7142

Array ATOM79
 Depth 214
 Start 19 DEC 1900
 End 29 DEC 1900

Figure 94.

TEMPERATURE SPECTRUM

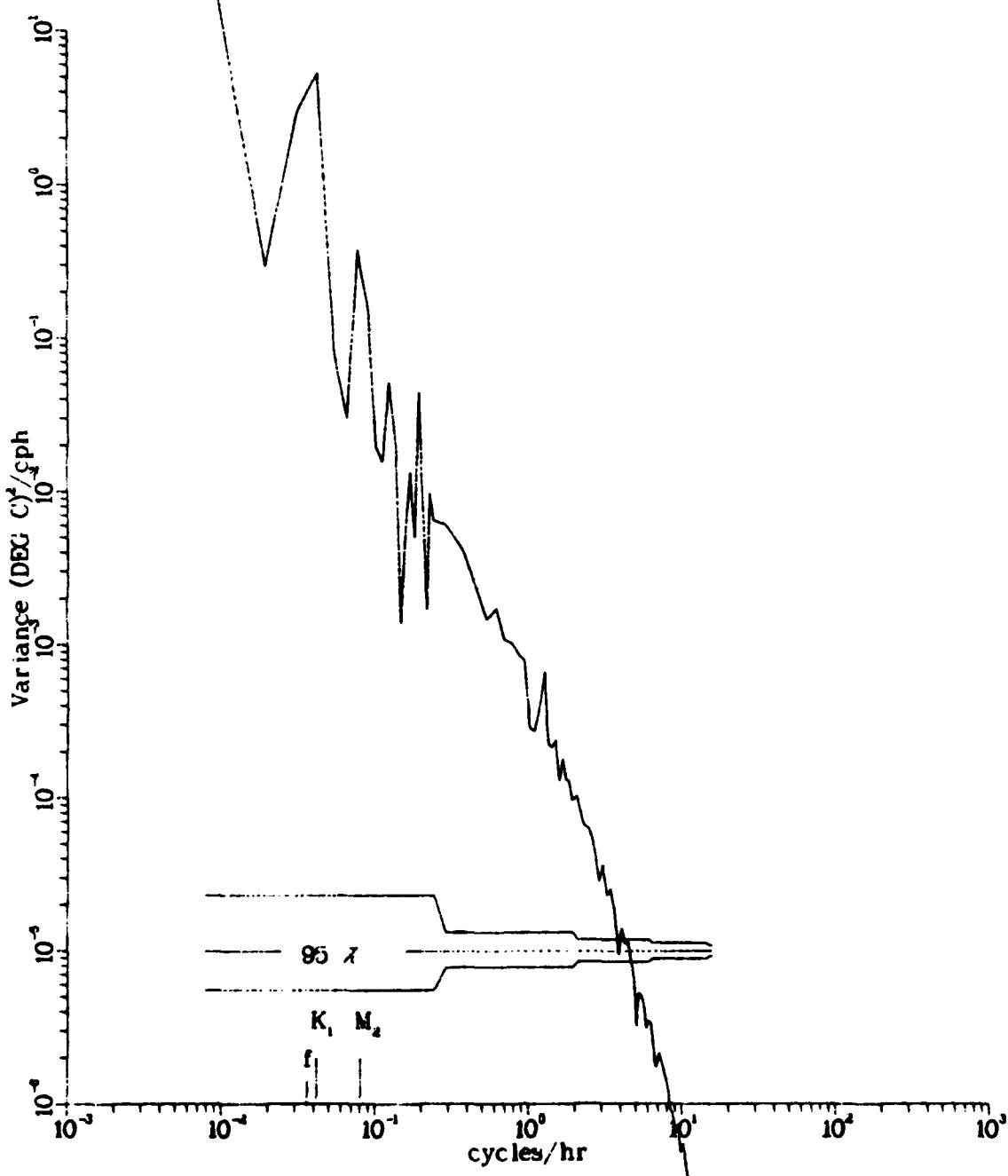


Variable T
 File VACMF
 Meter 000412
 Lat. 25.806
 Long -89.7442

Array ATOM79
 Depth 350
 Start 19 DEC 1900
 End 29 DEC 1900

Figure 95.

TEMPERATURE SPECTRUM

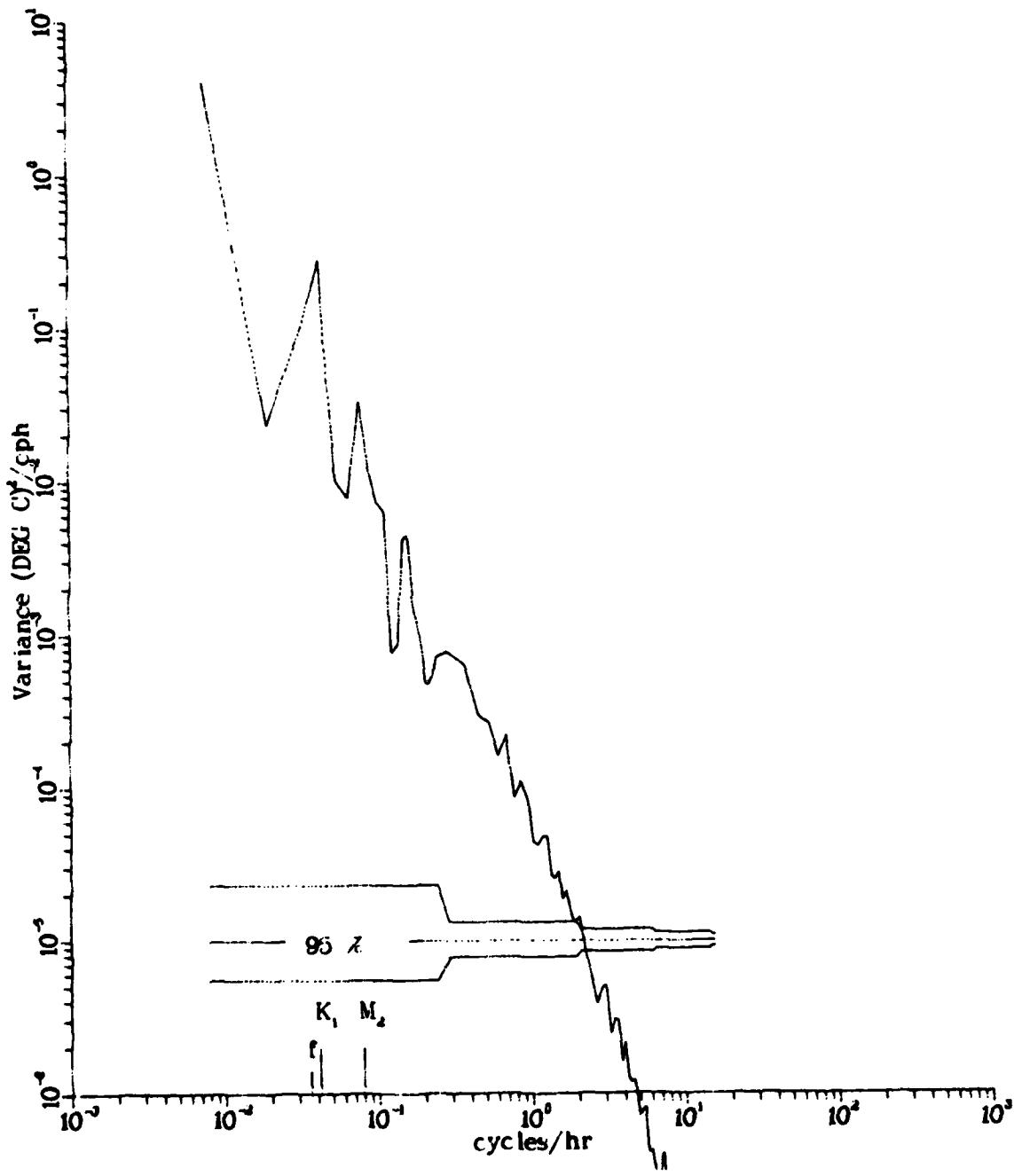


Variable T
 File VACMF
 Meter 000289
 Lat 25 806
 Long -89 74.42

Array ATOM79
 Depth 500
 Start 19 DEC 1900
 End 29 DEC 1900

Figure 96.

TEMPERATURE SPECTRUM

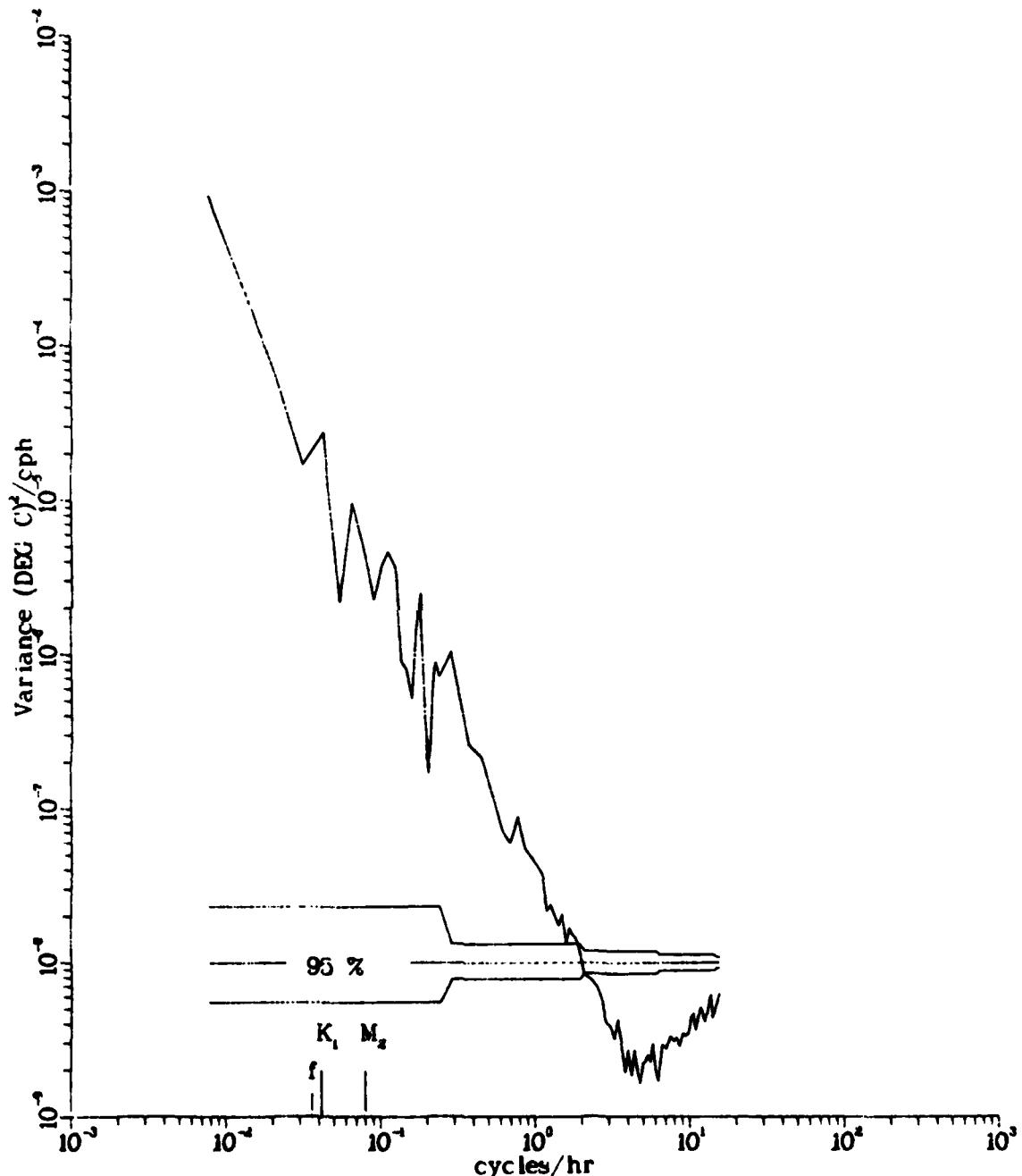


Variable T
 File VACMF
 Meter 000216
 Lat 25 806
 Long -89 7442

Array ATOM79
 Depth 800
 Start 19 DEC 1900
 End 29 DEC 1900

Figure 97.

TEMPERATURE SPECTRUM



Variable T
File VACMF
Meter 000300
Lat. 25.808
Long -89.742

Array ATOM79
Depth 2400
Start 19 DEC 1900
End 29 DEC 1900

Figure 98.

3.2 Acoustic Current Meters

- 3.2.1 Current Histograms and Statistics (Figures 99-124)
- 3.2.2 Current Time Series (Figures 125-189)
- 3.2.3 Temperature Time Series (Figures 190-201)
- 3.2.4 Current Spectra (Figures 202-240)
- 3.2.5 Temperature Spectra (Figures 241-252)

DEGREES TRUE									
DIRECTION OF MAX SPEED									
MAXIMUM SPEED									
-11.86 CM/SEC									
-57.32 CM/SEC									
-21.13 CM/SEC									
MAXIMUM WIND DIRECTION									
MAXIMUM WIND VELOCITY									
PERCENTAGE ZERO SPEEDS									
0									
0.6									
1.2									
1.8									
2.4									
3.0									
3.6									
4.2									
4.8									
5.4									
6.0									
6.6									
7.2									
7.8									
8.4									
9.0									
9.6									
10.2									
10.8									
11.4									
12.0									
12.6									
13.2									
13.8									
14.4									
15.0									
15.6									
16.2									
16.8									
17.4									
18.0									
18.6									
19.2									
19.8									
20.4									
21.0									
21.6									
22.2									
22.8									
23.4									
24.0									
24.6									
25.2									
25.8									
26.4									
27.0									
27.6									
28.2									
28.8									
29.4									
30.0									
30.6									
31.2									
31.8									
32.4									
33.0									
33.6									
34.2									
34.8									
35.4									
36.0									
36.6									
37.2									
37.8									
38.4									
39.0									
39.6									
40.2									
40.8									
41.4									
42.0									
42.6									
43.2									
43.8									
44.4									
45.0									
45.6									
46.2									
46.8									
47.4									
48.0									
48.6									
49.2									
49.8									
50.4									
51.0									
51.6									
52.2									
52.8									
53.4									
54.0									
54.6									
55.2									
55.8									
56.4									
57.0									
57.6									
58.2									
58.8									
59.4									
60.0									
60.6									
61.2									
61.8									
62.4									

FILE:	ACM	ARRAY:	ATOM79	START:	20 DEC 1979	LATITUDE:	25.8C5555
METER:	790120	END:		LONGITUDE:	-89.744165		
2- 10						0	0.0
15- 20						0	0.0
-20- 30						0	0.0
30- 40						0	0.0
40- 50						0	0.0
50- 60						0	0.0
60- 70						0	0.0
70- 80						0	0.0
80- 90						0	0.0
90-100						0	0.0
100-110						0	0.0
110-120						0	0.0
120-130						0	0.0
130-140						0	0.0
140-150						0	0.0
150-160						0	0.0
160-170						0	0.0
170-180						0	0.0
180-190						0	0.0
190-200						0	0.0
200-210						0	0.0
210-220						0	0.0
220-230						0	0.0
230-240						0	0.0
240-250						0	0.0
250-260						0	0.0
260-270						0	0.0
270-280						0	0.0
280-290						0	0.0
290-300						0	0.0
300-310						0	0.0
310-320						0	0.0
320-330						0	0.0
330-340						0	0.0
340-350						0	0.0
350-360						0	0.0
SPEED	3	5	10	15	20	25	30
SUM	0	0	0	0	157.1	17.2881	4.6226
PIN CT.	0	0	0	0	3.9	8.7	1.128
NUMBER OF ZERO SPEEDS	0	0	0	0	13.8	27.1	21.3
TOTAL NUMBER OF OBS.	36700				111.8	0.8	
AVERAGE SCALAR SPEED					PERCENTAGE ZERO SPEEDS	0.0	0.0
STANDARD DEVIATION	45.79	CM/SEC				0.0	0.0
VECTOR MEAN SPEED	8.24	CM/SEC				0.0	0.0
VECTOR MEAN DIRECTION	43.31	CM/SEC				0.0	0.0
	43.31	DEGREES TRUE				0.0	0.0
	300.46					0.0	0.0
					DIRECTION OF MAX SPD	327.07	DEGREES TRUE

Figure 100.

FILE: ACM		ARRAY: ATOM79		START: 29 DEC 1979		LATITUDE: 25.905555		LONGITUDE: -89.744665	
METER: 790100		FNO: 000137		FNO:					
DEPTH: 00-10									
00- 50	0	0	0	0	0	0	0	0	0
50- 60	1	0	0	0	0	0	0	0	0
60- 70	0	0	0	0	0	0	0	0	0
70- 80	0	0	0	0	0	0	0	0	0
80- 90	0	0	0	0	0	0	0	0	0
90-100	0	0	0	0	0	0	0	0	0
100-110	0	0	0	0	0	0	0	0	0
110-120	1	0	0	0	0	0	0	0	0
120-130	0	0	0	0	0	0	0	0	0
130-140	0	0	0	0	0	0	0	0	0
140-150	0	0	0	0	0	0	0	0	0
150-160	0	0	0	0	0	0	0	0	0
160-170	1	0	0	0	0	0	0	0	0
170-180	0	0	0	0	0	0	0	0	0
180-190	0	0	0	0	0	0	0	0	0
190-200	0	0	0	0	0	0	0	0	0
200-210	0	0	0	0	0	0	0	0	0
210-220	0	0	0	0	0	0	0	0	0
220-230	0	0	0	0	0	0	0	0	0
230-240	0	0	0	0	0	0	0	0	0
240-250	0	0	0	0	0	0	0	0	0
250-260	0	0	0	0	0	0	0	0	0
260-270	2	0	0	0	0	0	0	0	0
270-280	76	133	109	244	551	1354	610	0	0
280-290	47	464	669	1322	1020	921	614	94	0
290-300	16	281	887	1551	1168	1436	1008	60	0
300-310	1	310	658	773	385	1834	2567	1068	148
310-320	67	163	135	276	1750	2462	1251	248	48
320-330	1	2	3	3	4	67	627	1672	394
330-340	1	1	1	1	1	13	75	13	111
340-350	2	4	1	1	1	1	1	1	5
350-360	0	0	0	0	0	0	0	0	0
PER C1	0	3	10	4	1	194	1435	35	0
NUMBER OF ZERO SPEEDS	0	0	0	5	40	707	12.5	24.0	12.3
TOTAL NUMBER OF OBS.	36700	0	0	0	0	0	0	0	0
AVERAGE SCALAR SPEED	46.44	CM/SEC	MAXIMUM/MINIMUM U	94.12	CM/SEC	-54.75	CM/SEC	0	0
STANDARD DEVIATION	8.67	CM/SEC	MAXIMUM/MINIMUM V	73.51	CM/SEC	-63.53	CM/SEC	0	0
VECTOR MEAN SPEED	43.99	CM/SEC	MAXIMUM SPEED U	99.47	CM/SEC	0	0	0	0
VECTOR MEAN DIRECTION	298.36	DEGREES TRUE	DIRECTION OF MAX SPC	as 5.19	DEGREES TRUE	0	0	0	0

Figure 101.

FILE:	ARRAY: ATOM79	STAR T:	21 DEC 1979	LATITUDE:	25.805555
METER:	790.00	FNO:		LONGITUDE:	-89.744165
DEPTH:	000149				
0- 10					
10- 20					
20- 30					
30- 40					
40- 50					
50- 60					
60- 70					
70- 80					
80- 90					
90-100					
100-110					
110-120					
120-130					
130-140					
140-150					
150-160					
160-170					
170-180					
180-190					
190-200					
200-210					
210-220					
220-230					
230-240					
240-250					
250-260					
260-270					
270-280					
280-290					
290-300					
300-310					
310-320					
320-330					
330-340					
340-350					
350-360					
SPEED	0	5	10	15	20
SUM	0	0	0	0	322 1714 3089 3959 4845 8971 7929 3977 352
PER CT.	.0	.0	.0	.0	4.9 8.8 11.3 13.8 25.5 22.6 11.3 1.0 .0 .0
NUMBER OF ZERO SPEEDS	0	0	0	0	0
TOTAL NUMBER OF OBS.	35158				
AVERAGE SCALAR SPEED	45.60	C/M SEC			
STANDARD DEVIATION	8.57	C/M SEC			
VECTOR MEAN SPEED	43.05	C/M SEC			
VECTOR MEAN DIRECTION	298.51	DEGREES TRUE			
MAXIMUM/MINIMUM U	-14.33	C/M SEC	-58.89	C/M SEC	
MAXIMUM/MINIMUM V	56.15	C/M SEC	-26.98	C/M SEC	
MAXIMUM SPEED	62.61	C/M SEC			
DIRECTION OF MAX SPD	331.12	DEGREES TRUE			

Figure 102.

FILE:	ACM	ANFAY: ATOM70	STABL: 2-D DISC LATTY	ATTITUDE: 25.96255
M.L.R.:	1921.3	FNO:	2070151	INSTRUMENT: -69.744165
2- 10				
11- 25				
22- 30				
30- 40				
40- 50				
50- 60				
60- 70				
70- 80				
80- 90				
90-100				
100-110				
110-120				
120-130				
130-140				
140-150				
150-160				
160-170				
170-180				
180-190				
190-200				
200-210				
210-220				
220-230				
230-240				
240-250				
250-260				
260-270				
270-280				
280-290				
290-300				
300-310				
310-320				
320-330				
330-340				
340-350				
350-360				
SPEED	3	5	10	20
SUM	0	0	23	469
PER C.I.	0.0	0.1	0.1	3.67
NUMBER OF ZERO SPECIES	0	1	1	177
TOTAL NUMBER OF DATA	0	0	0	46711802
AVERAGE SCALAR SPEED	44.49	CM/SEC	MAXIMUM/MINIMUM U	-14.64 CM/SEC
STANDARD DEVIATION	2.90	CM/SEC	MAXIMUM/MINIMUM V	46.48 CM/SEC
VECTOR MEAN SPEED	42.27	CM/SEC	MAXIMUM SPEED	60.36 CM/SEC
VECTOR MEAN DIRECTION	228.52	DEGREES	DIRECTION OF MAX SPL	311.79 DEGREES TRUE

Figure 103.

FILE: 101	ARMY ATOMIC	LATITUDE:	LONGITUDE:
MEASUREMENTS:	STANT.	20 UTC 1947,	END.
0°- 10°	0.0	0.0	0.0
10°- 20°	0.0	0.0	0.0
20°- 30°	0.0	0.0	0.0
30°- 40°	0.0	0.0	0.0
40°- 50°	0.0	0.0	0.0
50°- 60°	0.0	0.0	0.0
60°- 70°	0.0	0.0	0.0
70°- 80°	0.0	0.0	0.0
80°- 90°	0.0	0.0	0.0
90°-100°	0.0	0.0	0.0
100°-110°	0.0	0.0	0.0
110°-120°	0.0	0.0	0.0
120°-130°	0.0	0.0	0.0
130°-140°	0.0	0.0	0.0
140°-150°	0.0	0.0	0.0
150°-160°	0.0	0.0	0.0
160°-170°	0.0	0.0	0.0
170°-180°	0.0	0.0	0.0
180°-190°	0.0	0.0	0.0
190°-200°	0.0	0.0	0.0
200°-210°	0.0	0.0	0.0
210°-220°	0.0	0.0	0.0
220°-230°	0.0	0.0	0.0
230°-240°	0.0	0.0	0.0
240°-250°	0.0	0.0	0.0
250°-260°	0.0	0.0	0.0
260°-270°	0.0	0.0	0.0
270°-280°	0.0	0.0	0.0
280°-290°	0.0	0.0	0.0
290°-300°	0.0	0.0	0.0
300°-310°	0.0	0.0	0.0
310°-320°	0.0	0.0	0.0
320°-330°	0.0	0.0	0.0
330°-340°	0.0	0.0	0.0
340°-350°	0.0	0.0	0.0
350°-360°	0.0	0.0	0.0

Figure 104.

FILE:	ATOM79	START:	20 DEC 1979	END:	20 DEC 1979	LATITUDE:	25.85555	LONGITUDE:	-89.749165
C-10									
10-20									
20-30									
30-40									
40-50									
50-60									
60-70									
70-80									
80-90									
90-100									
100-110									
110-120									
120-130									
130-140									
140-150									
150-160									
160-170									
170-180									
180-190									
190-200									
200-210									
210-220									
220-230									
230-240									
240-250									
250-260									
260-270									
270-280									
280-290									
290-300									
300-310									
310-320									
320-330									
330-340									
340-350									
350-360									
SPEED	0	5	10	15	20	25	30	35	40
SUM	0	0	0	0	18	698	2360	3212	3063
PER CT.	0	0	0	0	0	942	1113	374	519
NUMBER OF ZERO SPEEDS	0	0	0	0	0	0	0	0	0
TOTAL NUMBER OF OBS.	39417								
AVERAGE SCALAR SPEED	42.46	CM/SEC							
STANDARD DEVIATION	7.54	CM/SEC							
VECTOR MEAN SPEED	40.27	CM/SEC							
VECTOR MEAN DIRECTION	200.20	Degrees True							
MATRIX MINIMUM U	-17.36	CM/SEC							
MATRIX MINIMUM V	-51.52	CM/SEC							
MATRIX MINIMUM W	48.62	CM/SEC							
MATRIX MAXIMUM	18.23	CM/SEC							
MATRIX MAXIMUM SPEED	58.57	CM/SEC							

Figure 105.

FILE: ACM	ARRAY: A10M10	STAR1: 20 DEC 1979	LATITUDE: 25.80555
METER: 790100		END:	LONGITUDE: -69.7AA45.5
0-10			
10-20			
20-30			
30-40			
40-50			
50-60			
60-70			
70-80			
80-90			
90-100			
100-110			
110-120			
120-130			
130-140			
140-150			
150-160			
160-170			
170-180			
180-190			
190-200			
200-210			
210-220			
220-230			
230-240			
240-250			
250-260	8	4	119 189 546 60
260-270	35	49 213 505 1189 592 177	
270-280	112	22 270 797 1279 447 78	
280-290	146	576 856 936 1499 1099 413	
290-300	113	1219 736 1053 1426 1339 284	
300-310	3	379 667 656 2942 3377 927	
310-320	3	90 160 289 699 3587 1715 98	
320-330	66	241 1261 1637 163	
330-340	15	127 34	
340-350			
350-360			
SPEED	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100		
SUM	0 0		
PER C1	.0 .0		
NUMBER OF ZERO SPEEDS	0 0		
TOTAL NUMBER OF OBS.	36000		
AVERAGE STANDARD SPEED	4.3-0.3 CM/SEC		
STANDARD DEVIATION	7.01 CM/SEC		
VECTORS MEAN SPEED	4.6-0.5 CM/SEC		
VECTORS MEAN DIRECTION	298.24 DEGREES TRUE		
DIRECTION OF MAX SPD	318.45 DEGREES TRUE		
PERCENTAGE ZERO SPEEDS	0		
MATRIX/MATRIX MAXIMUM	40-6.7 CM/SEC		
MATRIX/MATRIX MINIMUM	54-5.5 CM/SEC		
VECTORS MEAN SPEED	5.7-0.1 CM/SEC		

Figure 106.

FILE: ACM		ARRAY: ATOM79		LATITUDE: 25.905555	
METER: 790100		START: 20 DEC 1979		LONGITUDE: -88.744165	
DEPM: 000119		END:			
0- 10				0	.5
10- 20				0	.0
20- 30				0	.0
30- 40				0	.0
40- 50				0	.0
50- 60				0	.0
60- 70				0	.0
70- 80				0	.0
80- 90				0	.0
90-100				0	.0
100-110				0	.0
110-120				0	.0
120-130				0	.0
130-140				0	.0
140-150				0	.0
150-160				0	.0
160-170				0	.0
170-180				0	.0
180-190				0	.0
190-200				0	.0
200-210				0	.0
210-220				0	.0
220-230				0	.0
230-240		4	39 162 14	0	.0
240-250		57	220 162 406 77	219	.6
250-260		9	300 481 1366 1086 299 48	873	.4
260-270		12	1266 992 730 1517 886 1	2878	0.0
270-280		195	1046 673 1638 1784 991 126 15	3591	15.0
280-290		162	420 831 1191 2929 2060 68 3	5404	15.0
290-300		18	43 87 284 815 3144 995 67	6468	18.0
300-310		1CS	646 1343 526 31	6277	21.0
310-320			38 148	2651	17.1
320-330				186	.5
330-340				0	.0
340-350				0	.0
350-360				0	.0
SPEED	0	5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100			
SUM	0	0 0 0 0 0 396 3132 3617 64 110000 10021 2505 114 0 0 0 0 0 0 0 0 0 0 0 0			36000
PER CT.	0	*0 *0 0 1.1 6.7 9.5 17.8 27.6 27.8 7.0 *3 0 0 .J 0 0 0 0 0 0 0 0			
NUMBER OF ZERO SPEEDS	0				
TOTAL NUMBER OF OBS.	36000				
AVERAGE SCALAR SPEED	41.33	CM/SEC	MAXIMUM/MINIMUM U	-17.22	CM/SEC
STANDARD DEVIATION	7.09	CM/SEC	MAXIMUM/MINIMUM V	4.086	CM/SEC
VECTOR MEAN SPEED	39.17	CM/SEC	MAXIMUM SPEED	55.92	CM/SEC
VECTOR MEAN DIRECTION	296.94	Degrees TRUE	DIRECTION OF MAX SPD	317.52	Degrees TRUE

Figure 107.

FILE: ACM	ARRAY: ATOM79	START: 20 DEC 1979	LATITUDE: 25.8C55S
METER: 790100	DEPTH: 000186	END: 20 DEC 1979	LONGITUDE: -89.74E165
0-10			0 .C
10-20			0 .C
20-30			0 .C
30-40			0 .C
40-50			0 .C
50-60			0 .C
60-70			0 .C
70-80			0 .C
80-90			0 .C
90-100			0 .C
100-110			0 .C
110-120			0 .C
120-130			0 .C
130-140			0 .C
140-150			0 .C
150-160			0 .C
160-170			0 .C
170-180			0 .C
180-190			0 .C
190-200			0 .C
200-210			0 .C
210-220			0 .C
220-230			0 .C
230-240			0 .C
240-250			0 .C
250-260			0 .C
260-270			0 .C
270-280			0 .C
280-290			0 .C
290-300			0 .C
300-310			0 .C
310-320			0 .C
320-330			0 .C
330-340			0 .C
340-350			0 .C
350-360			0 .C
SPEED	3 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100		0 .C
SUM	0 0 0 0 214 2162 3736 6331 926611011 3115 175 0 0 0 0 0 0 0 0 0 0		0 .C
PER CT.	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		36000
NUMBER OF ZERO SPEEDS	0 0		
TOTAL NUMBER OF OBS.	16700		
AVERAGE SCALAR SPEED	42.11 CM/SEC	MAXIMUM/MINIMUM U	-18.09 CM/SEC
STANDARD DEVIATION	6.91 CM/SEC	MAXIMUM/MINIMUM V	-53.425 CM/SEC
VECTOR MEAN SPEED	40.09 CM/SEC	MAXIMUM SPEED	48.62 CM/SEC
VECTOR MEAN DIRECTION	100.31 DEGREES TRUE	DIRECTION OF MAX SPEED	-14.62 CM/SEC
			293.61 DEGREES TRUE

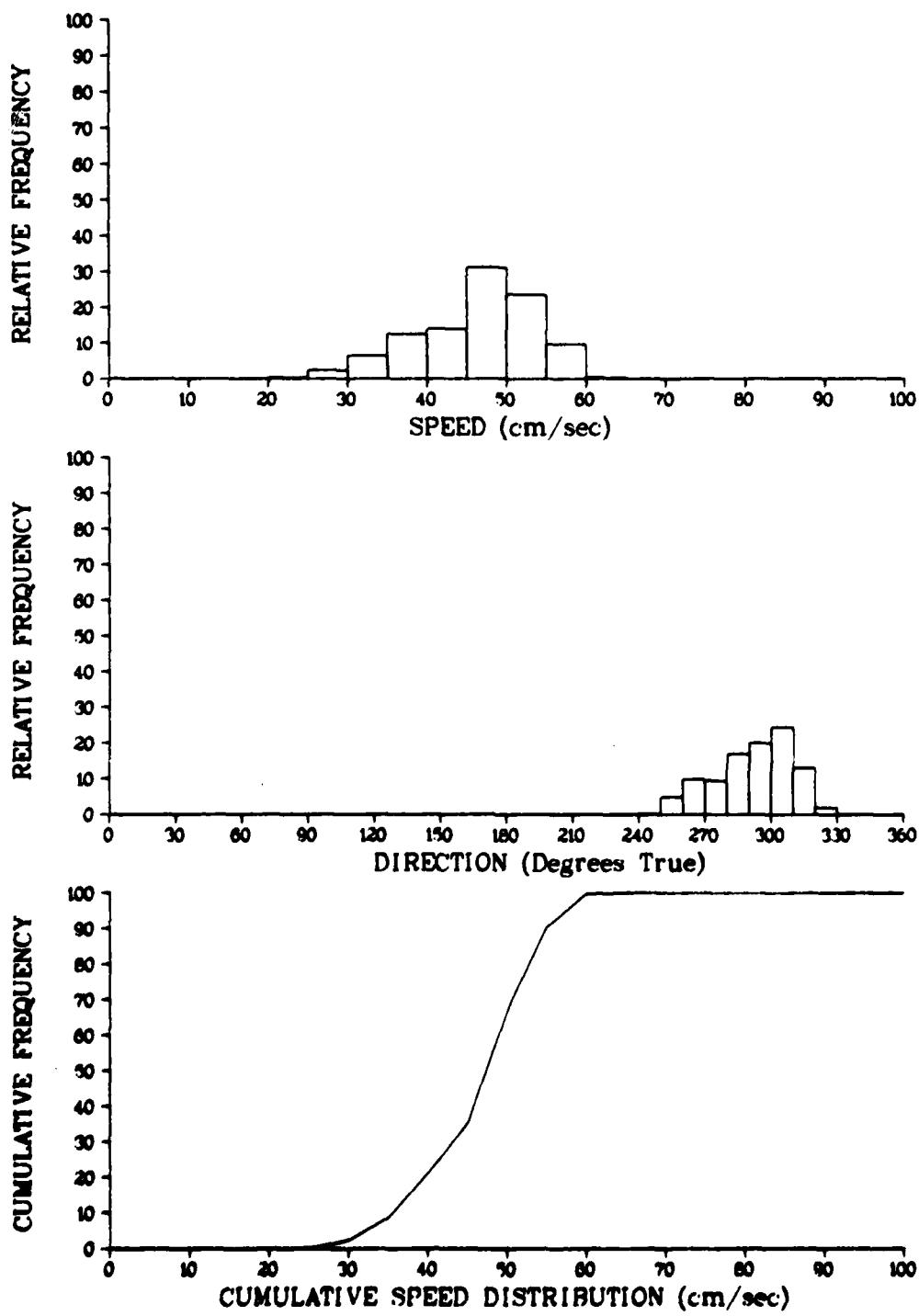
Figure 108.

Figure 109.

Figure 110.

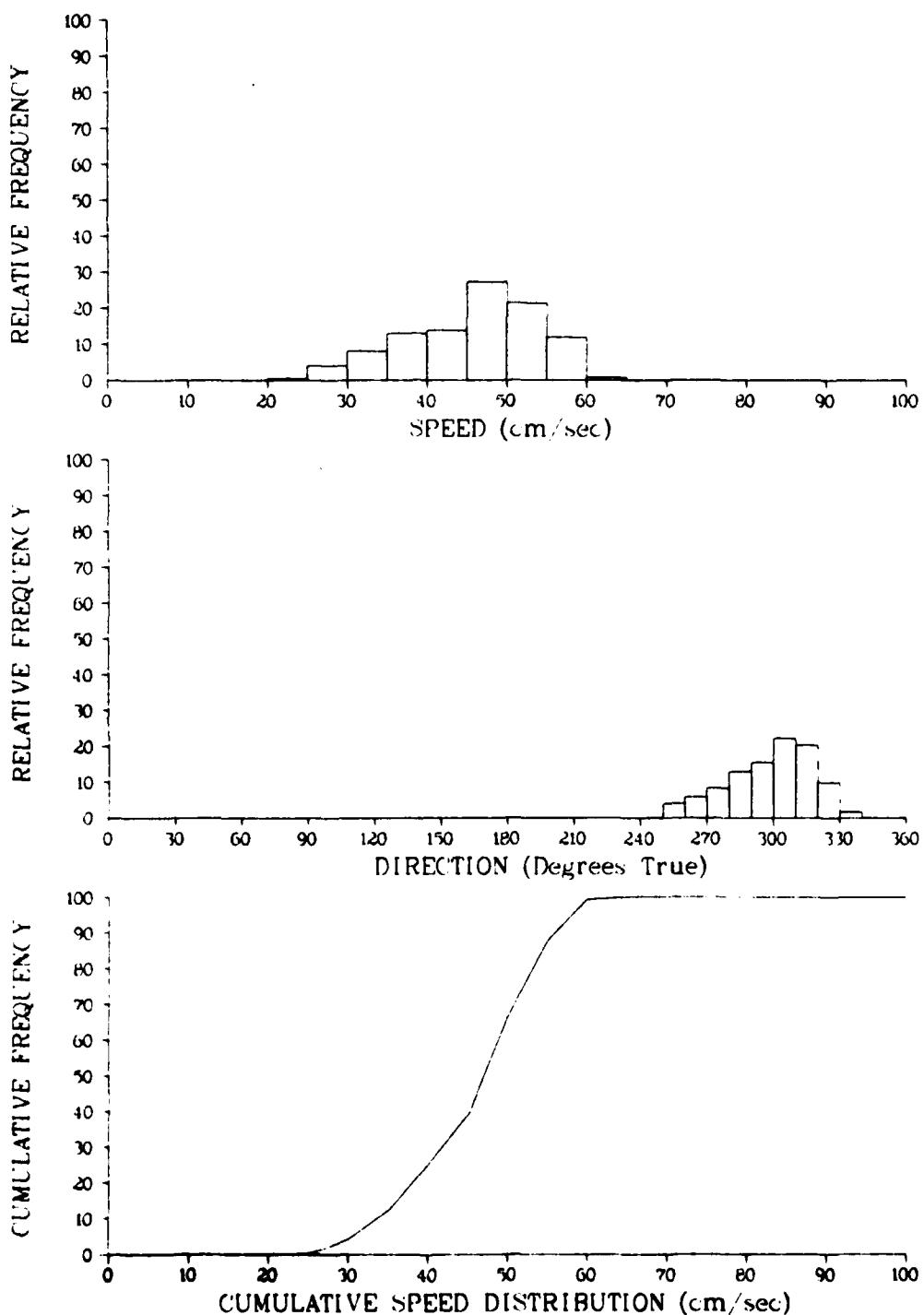
ב' סדר

Figure 111.



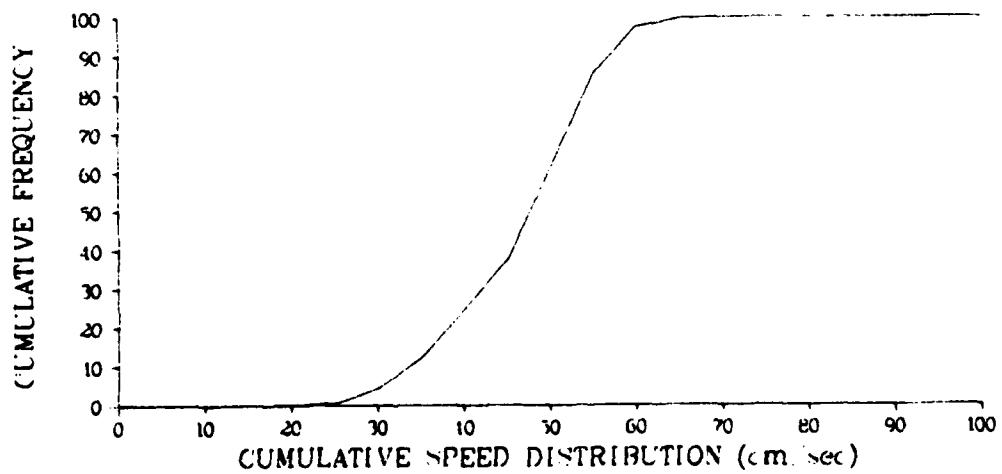
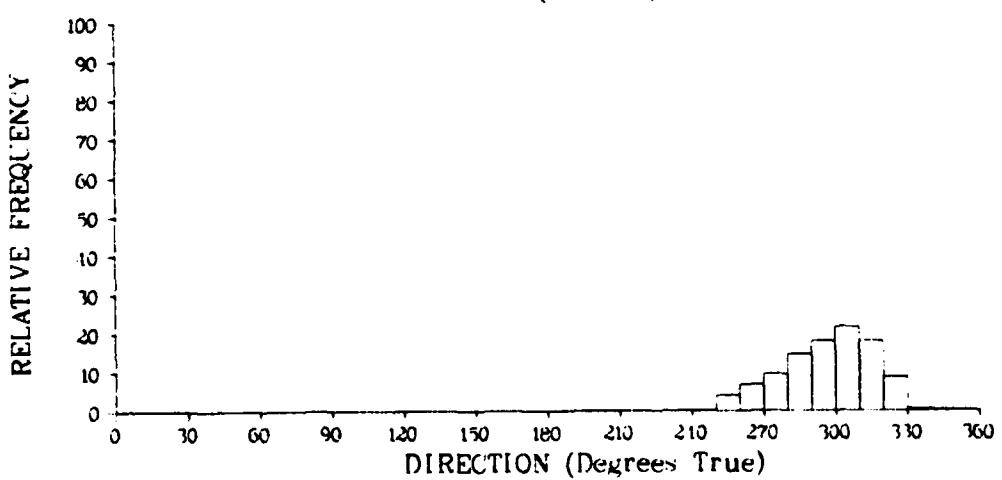
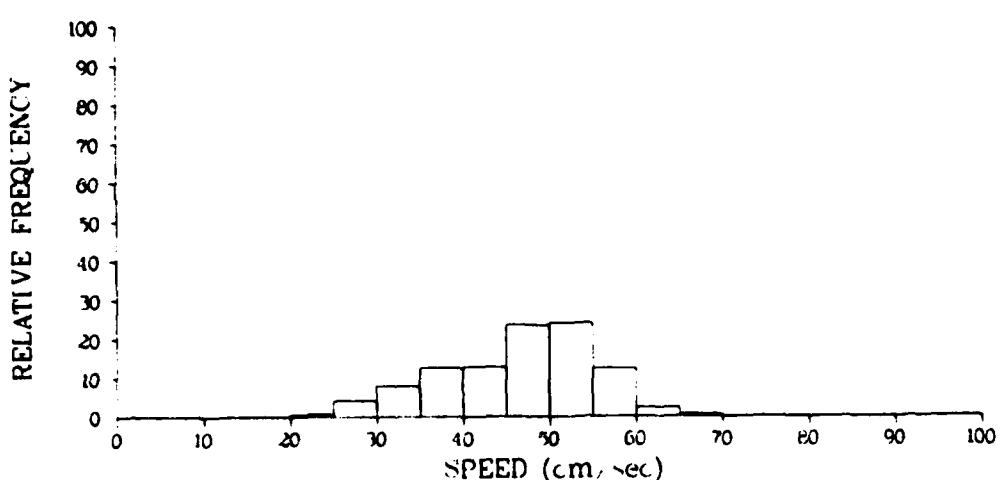
File	ACM	Array	ATOM79
Meter	790100	Depth	000123
Latitude	25 803555	Start	20 DEC 1979
Longitude	-89 74165	End	

Figure 112.



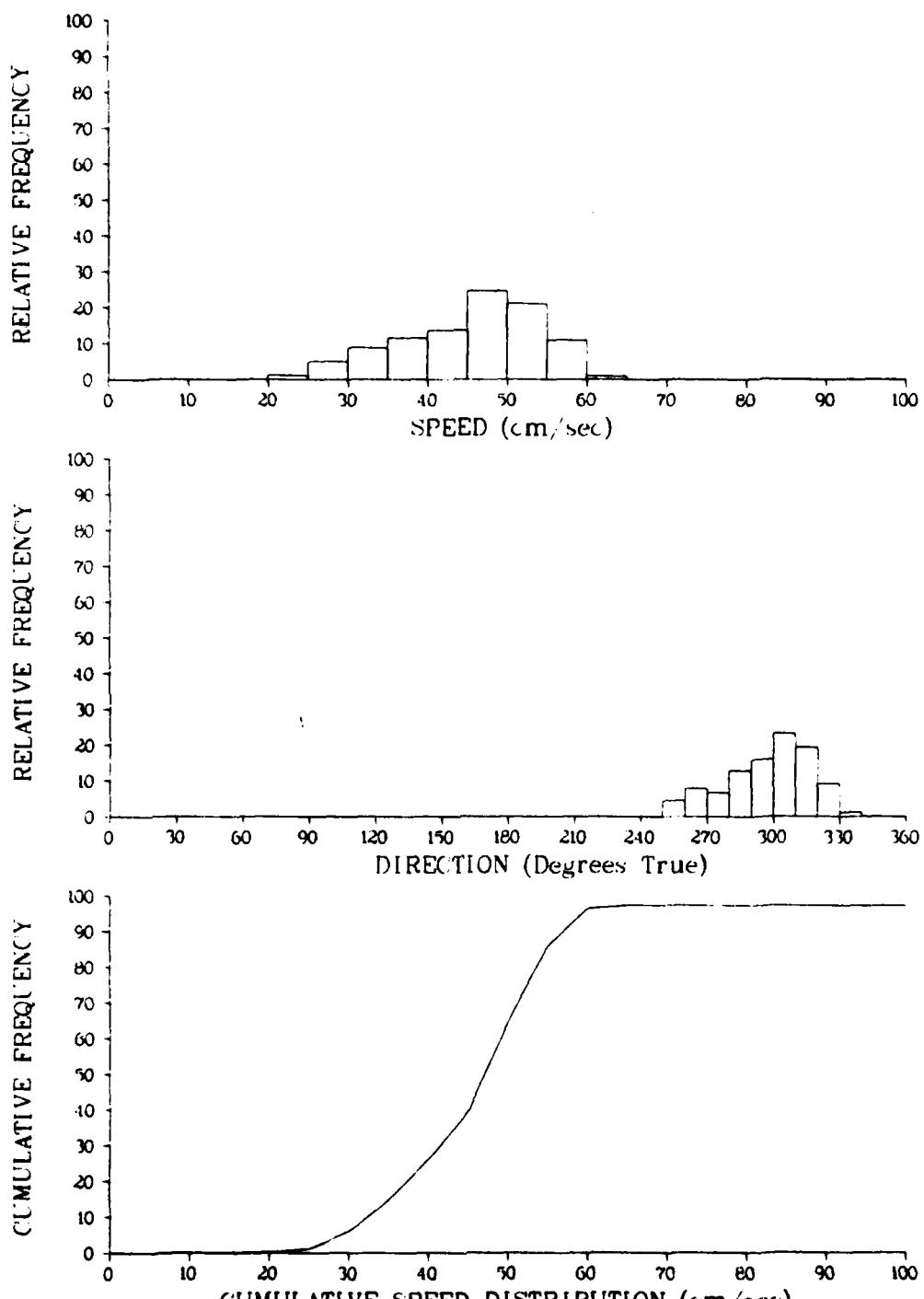
File	ACM	Array	ATOM79
Meter	790100	Depth	000130
Latitude	25 805555	Start	20
Longitude	-89 711165	End	7F 1979

Figure 113.



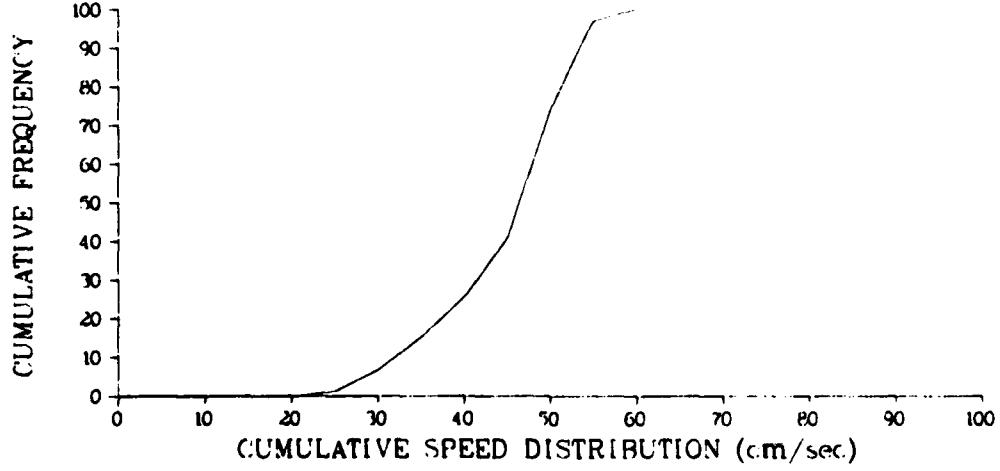
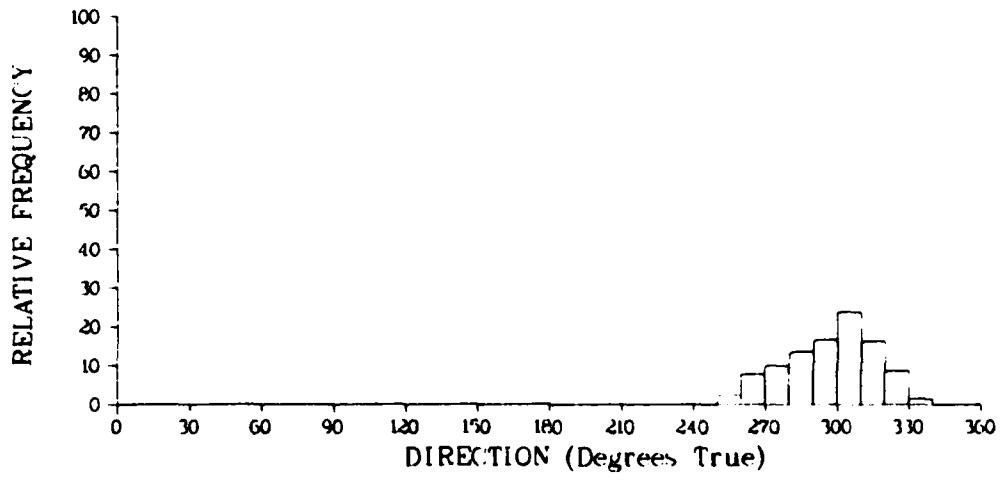
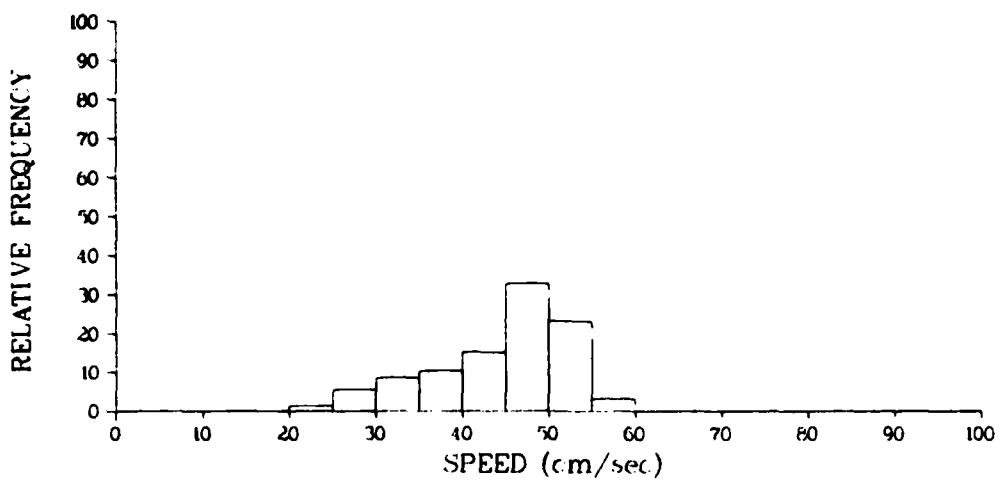
File	ACM	Array	ATOM79
Meter	790100	Depth	000137
Latitude	25 805555	Start	20 DEC 1979
Longitude	-89 744165	End	

Figure 114.



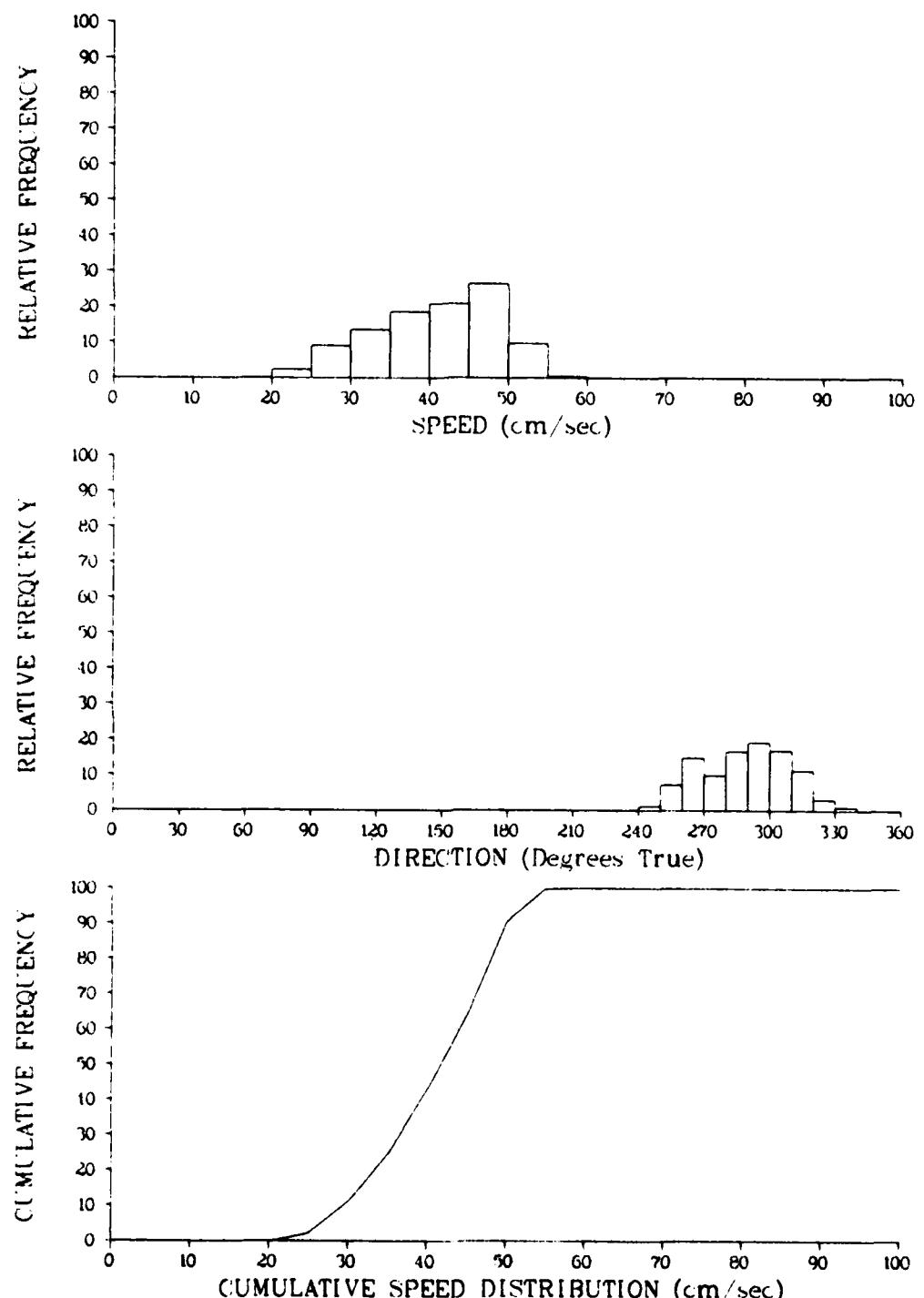
File	ACM	Array	ATOM79
Meter	790100	Depth	000144
Latitude	25805555	Start	20
Longitude	-89744165	End	DEX 1979

Figure 115.



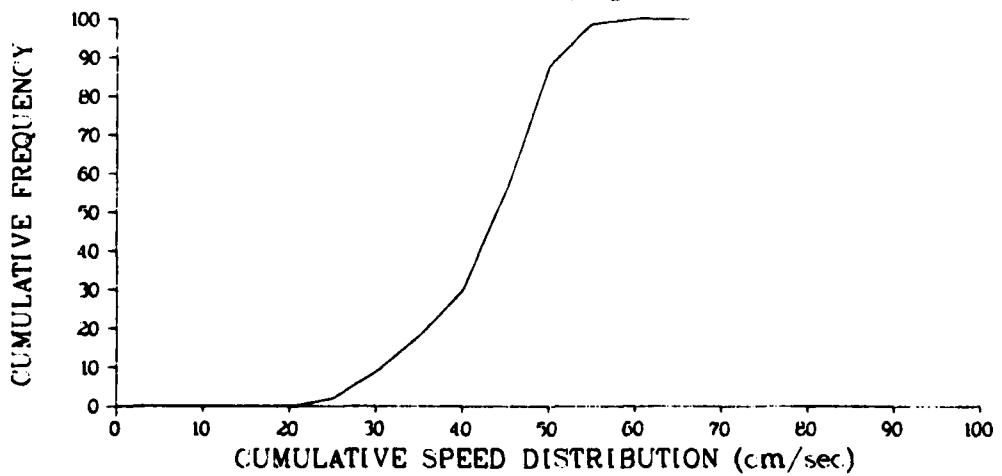
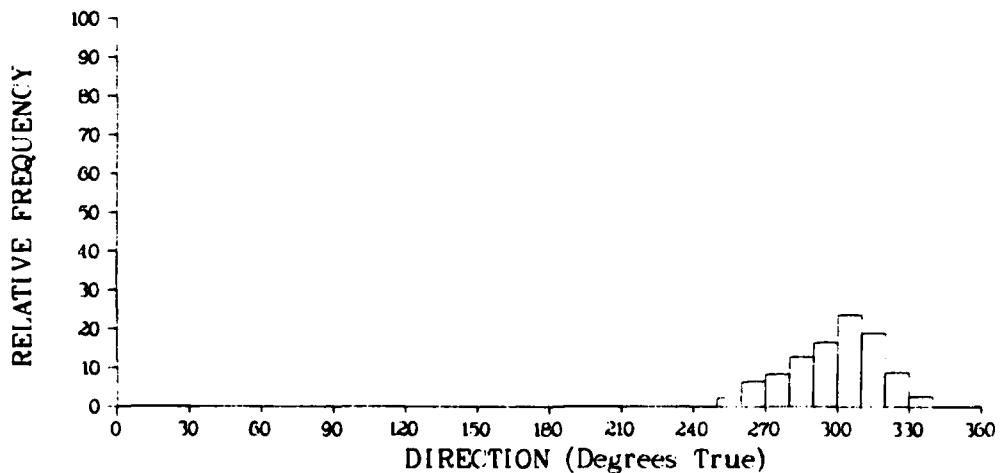
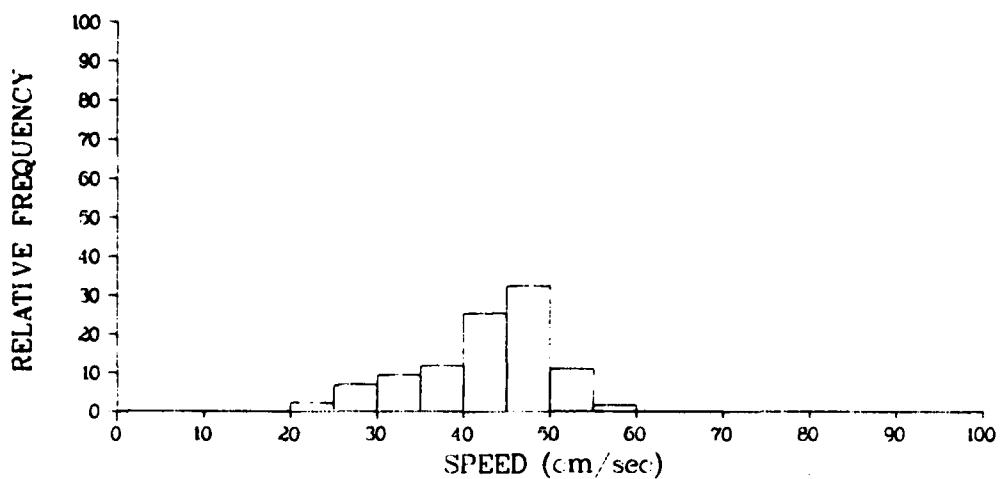
File Meter	ACM 790100	Array Depth	ATOM79 000151
Latitude	25 805555	Start	20 DEC 1979
Longitude	-89 74165	End	

Figure 116.



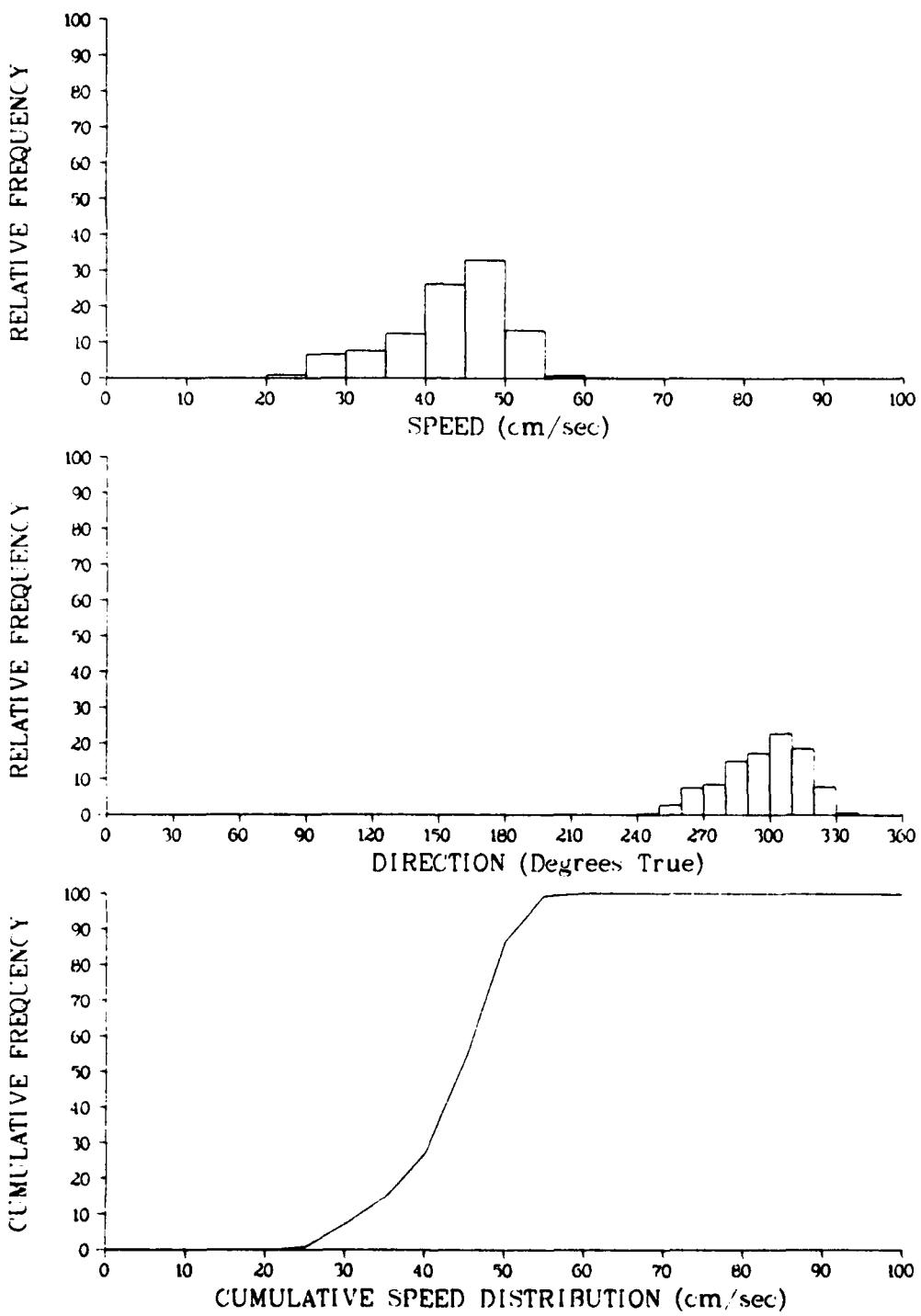
File	ACM	Array	ATOM79
Meter	790100	Depth	000158
Latitude	25 805555	Start	
Longitude	-89 744165	End	20 DEC 1

Figure 117.



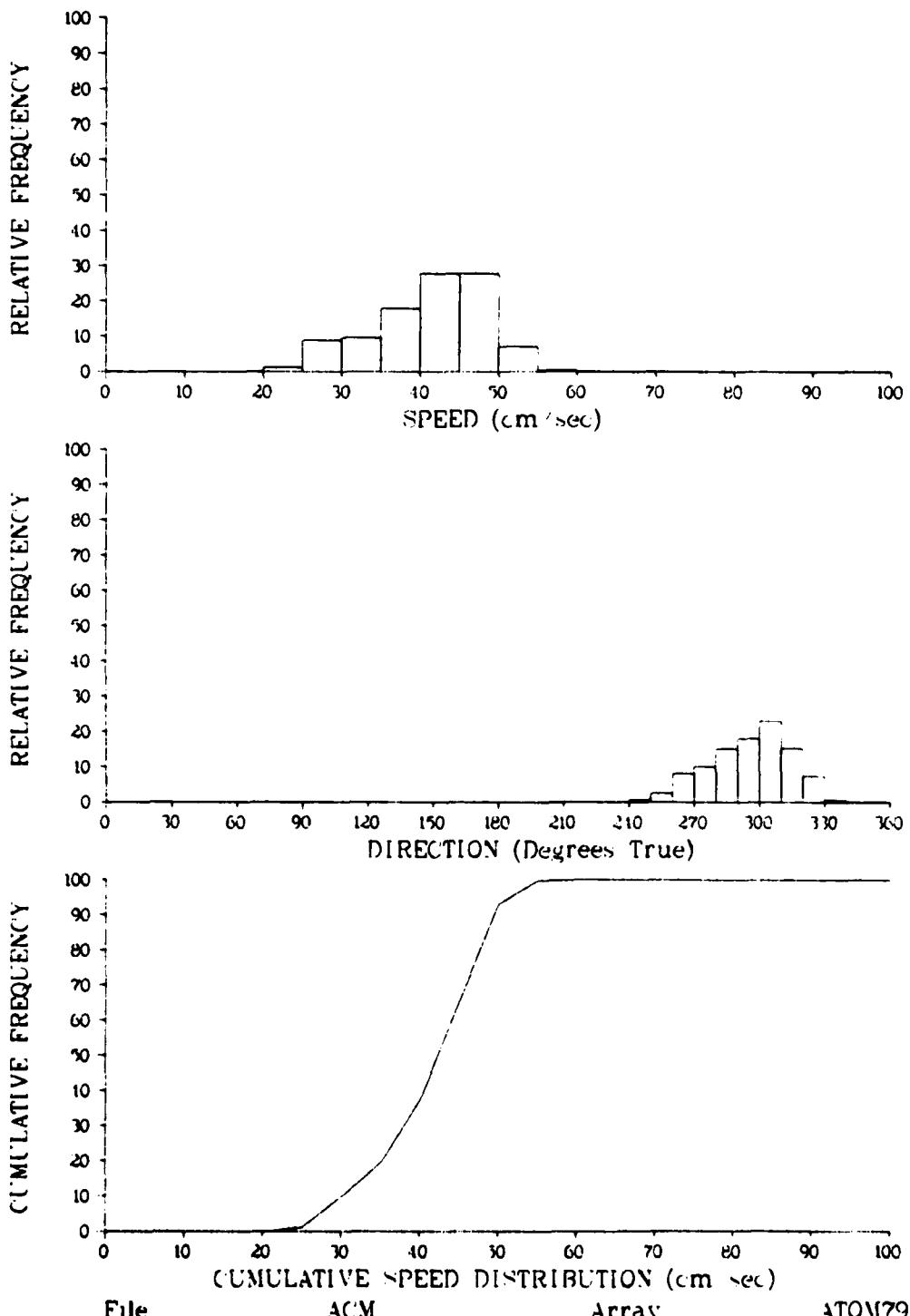
File ACM Array ATOM79
 Meter 790100 Depth 000165
 Latitude 25805555 Start 20 DEC 1979
 Longitude -89744165 End

Figure 118.



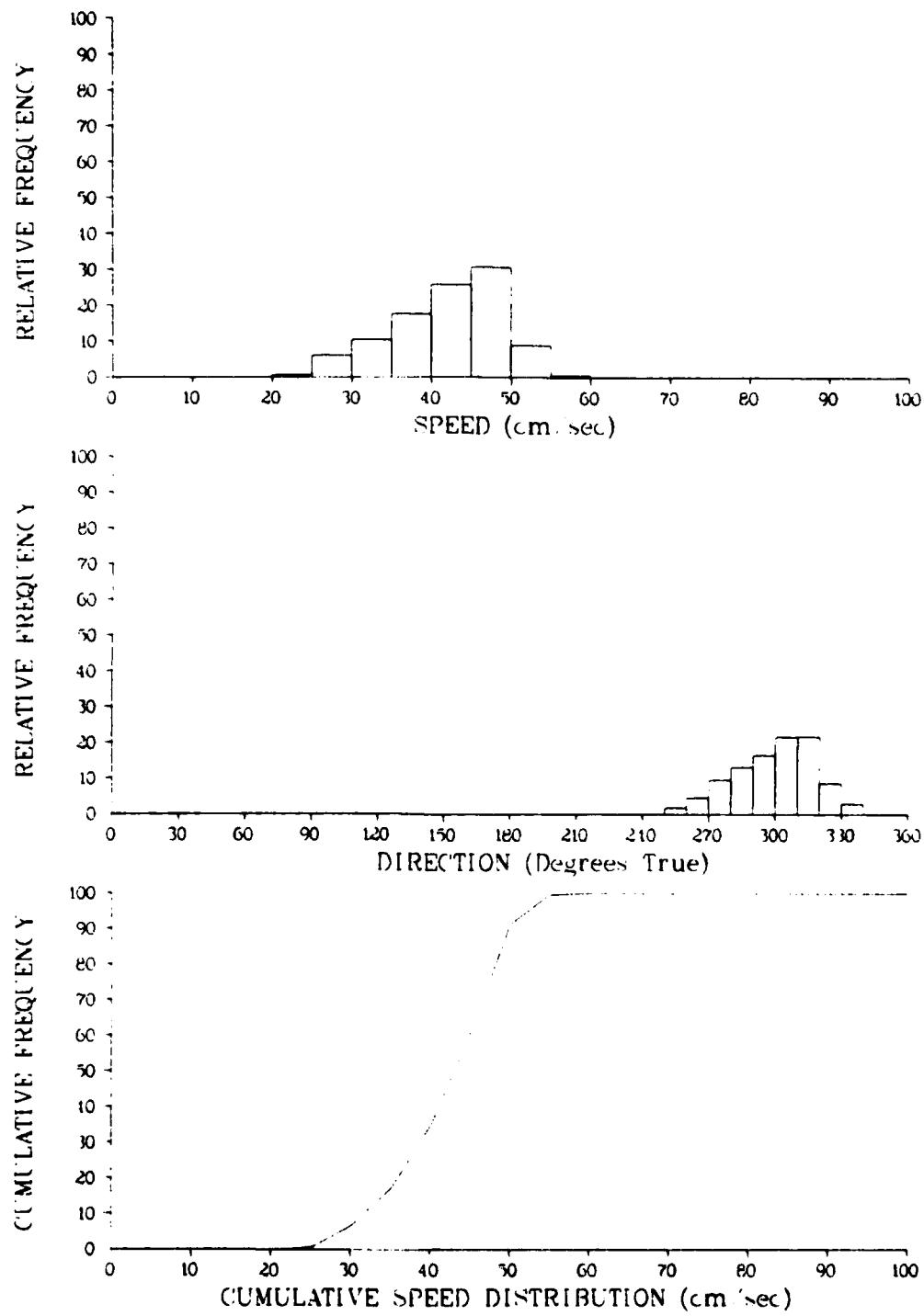
File	ACM	Array	ATOM79
Meter	790100	Depth	000172
Latitude	25 805555	Start	20 DEC
Longitude	-89 714165	End	/79

Figure 119.



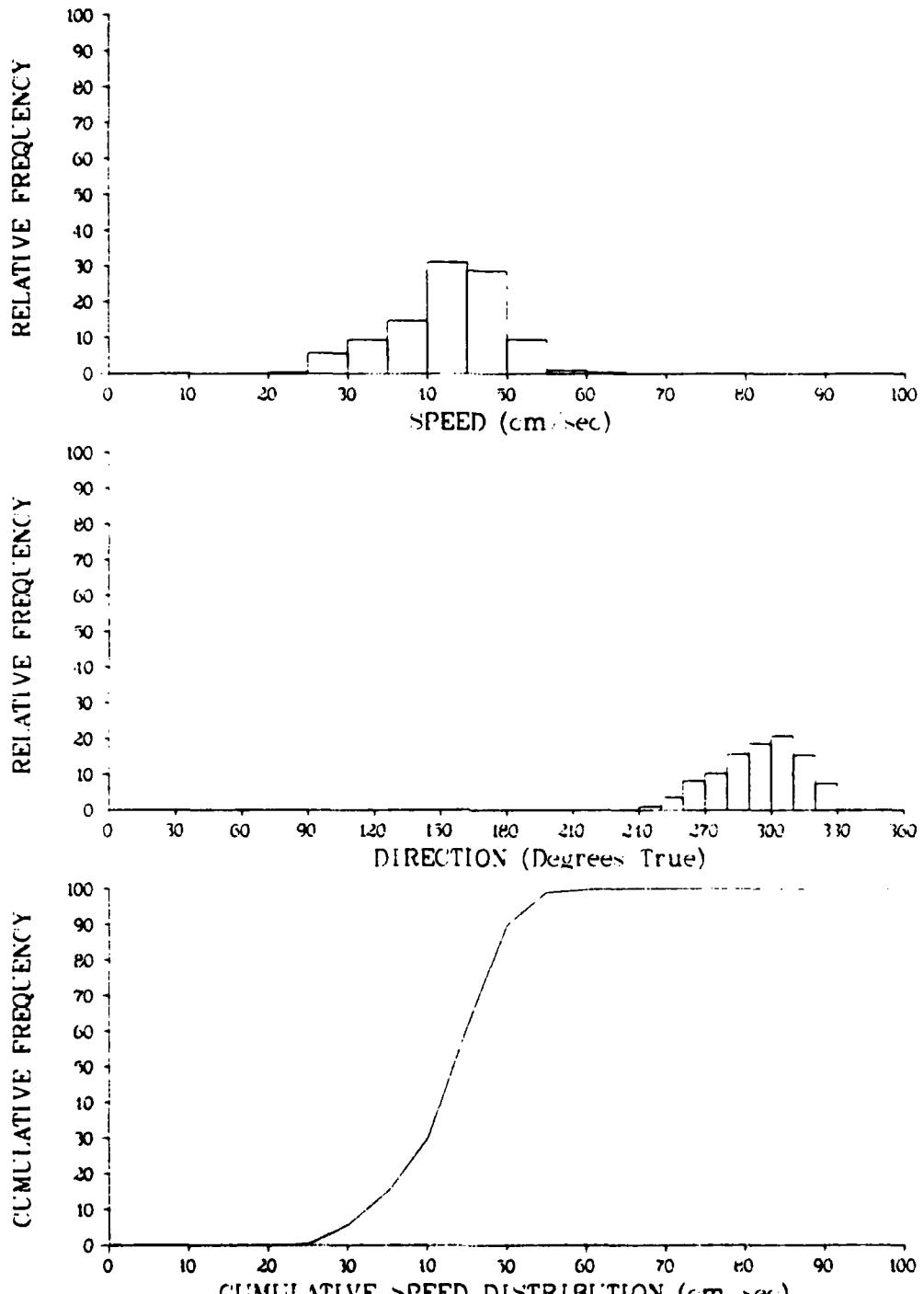
File	ACM	Array	ATOM79
Meter	790100	Depth	000179
Latitude	25 805555	Start	20 DEC 1979
Longitude	-89 74165	End	

Figure 120.



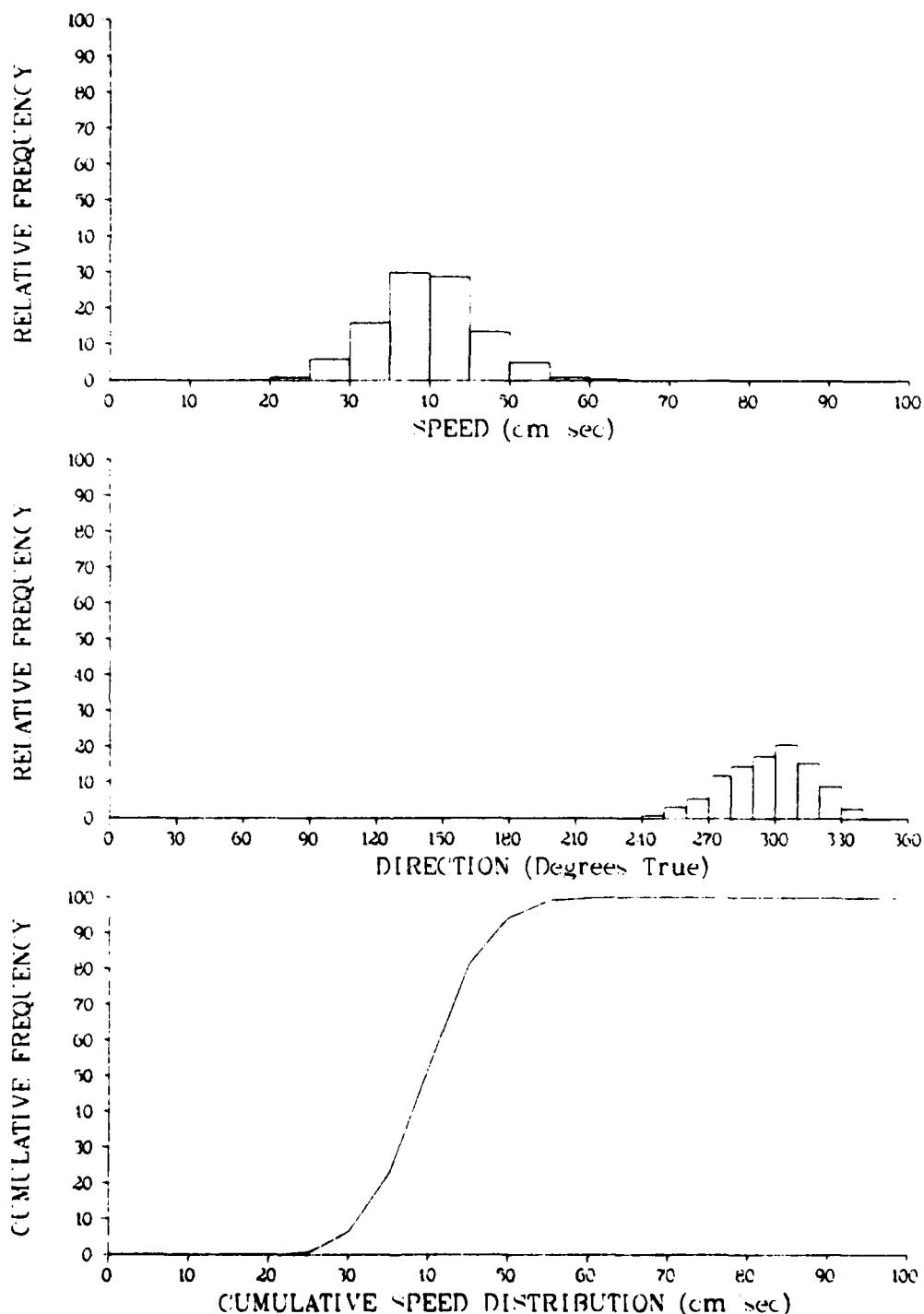
File	ACM	Array	ATOM79
Meter	790100	Depth	000186
Latitude	25 805555	Start	20 DEC 79
Longitude	-89 741165	End	

Figure 121.



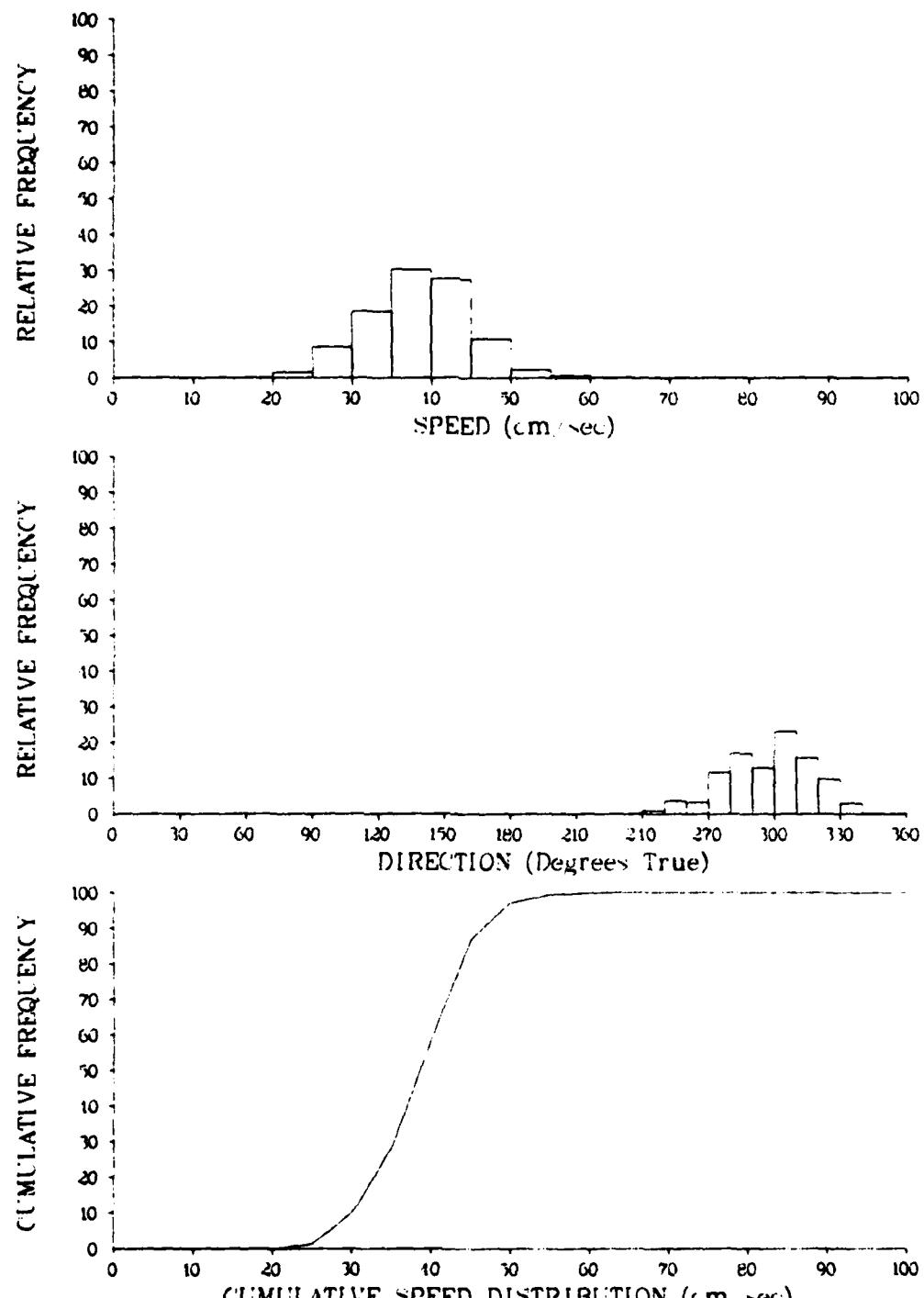
File	ACM	Array	ATOM79
Meter	790100	Depth	000193
Latitude	25 805555	Start	20 DEC 1979
Longitude	-89 714165	End	

Figure 122.



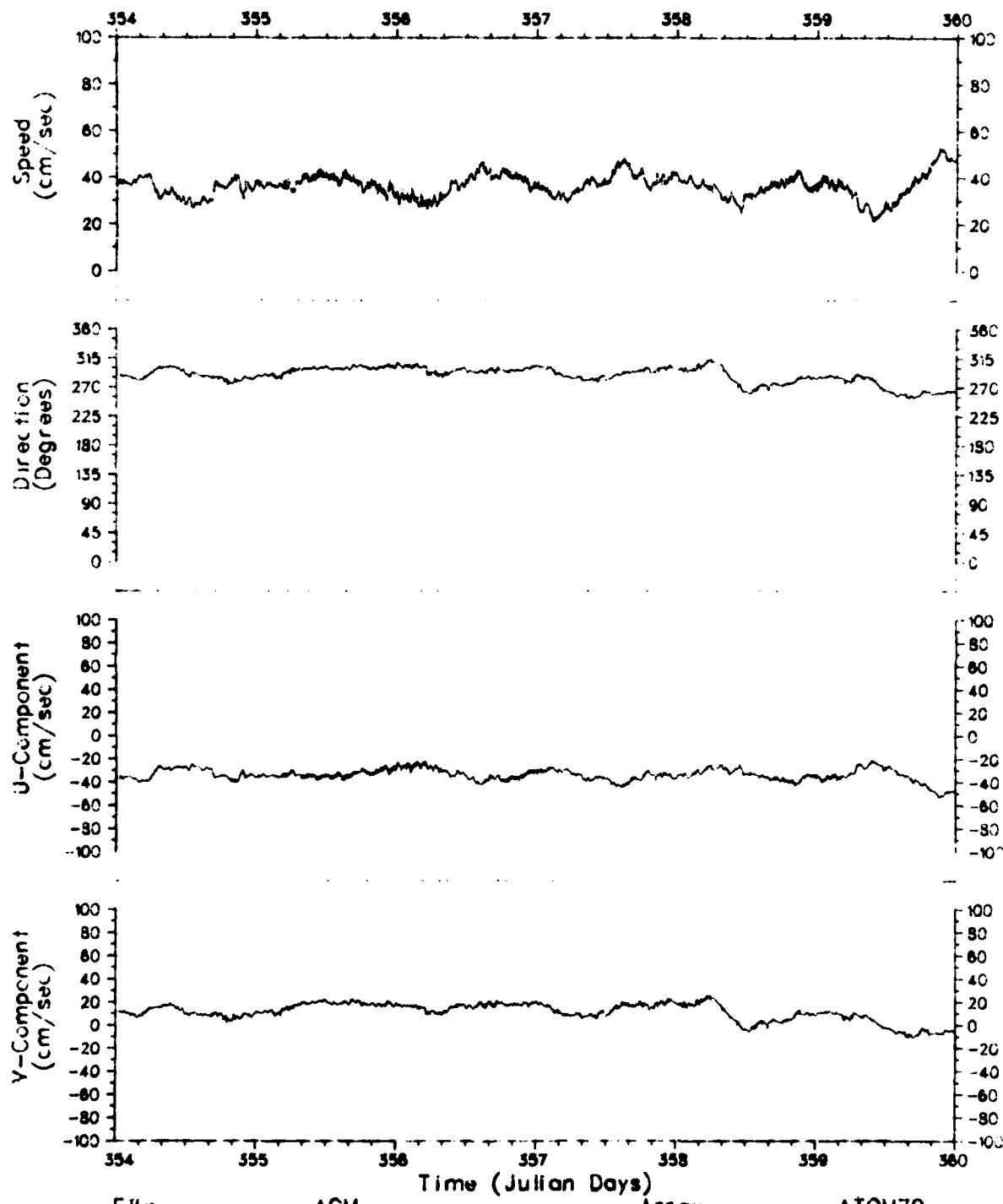
File	ACM	Arrav	ATOM79
Meter	790100	Depth	000200
Latitude	25 805555	Start	20 DEC 1979
Longitude	-89 741165	End	

Figure 123.



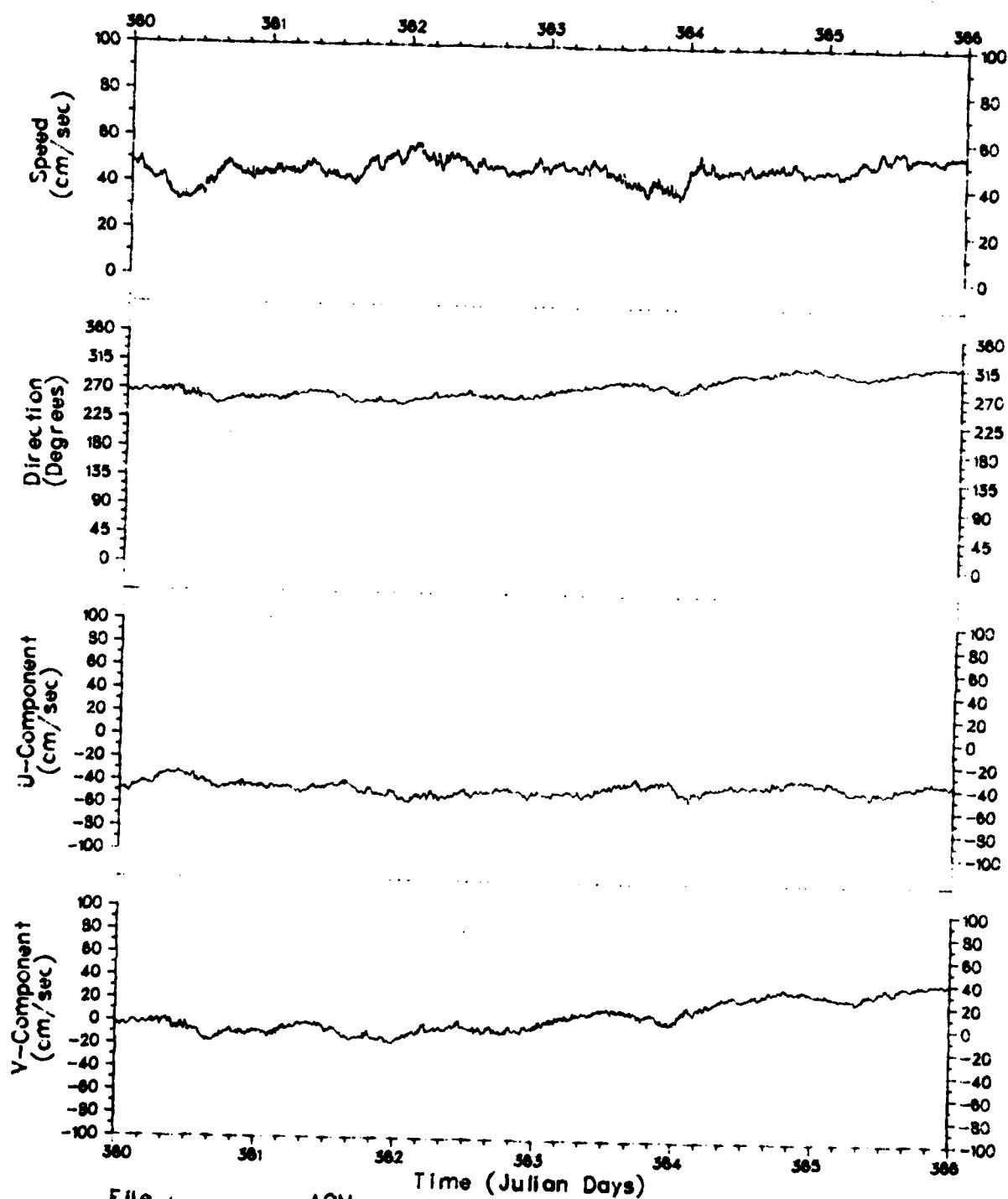
File	ACM	Arrav	ATOM79
Meter	790100	Depth	000207
Latitude	25 805555	Start	
Longitude	-89 711165	End	20 DEC 1979

Figure 124.



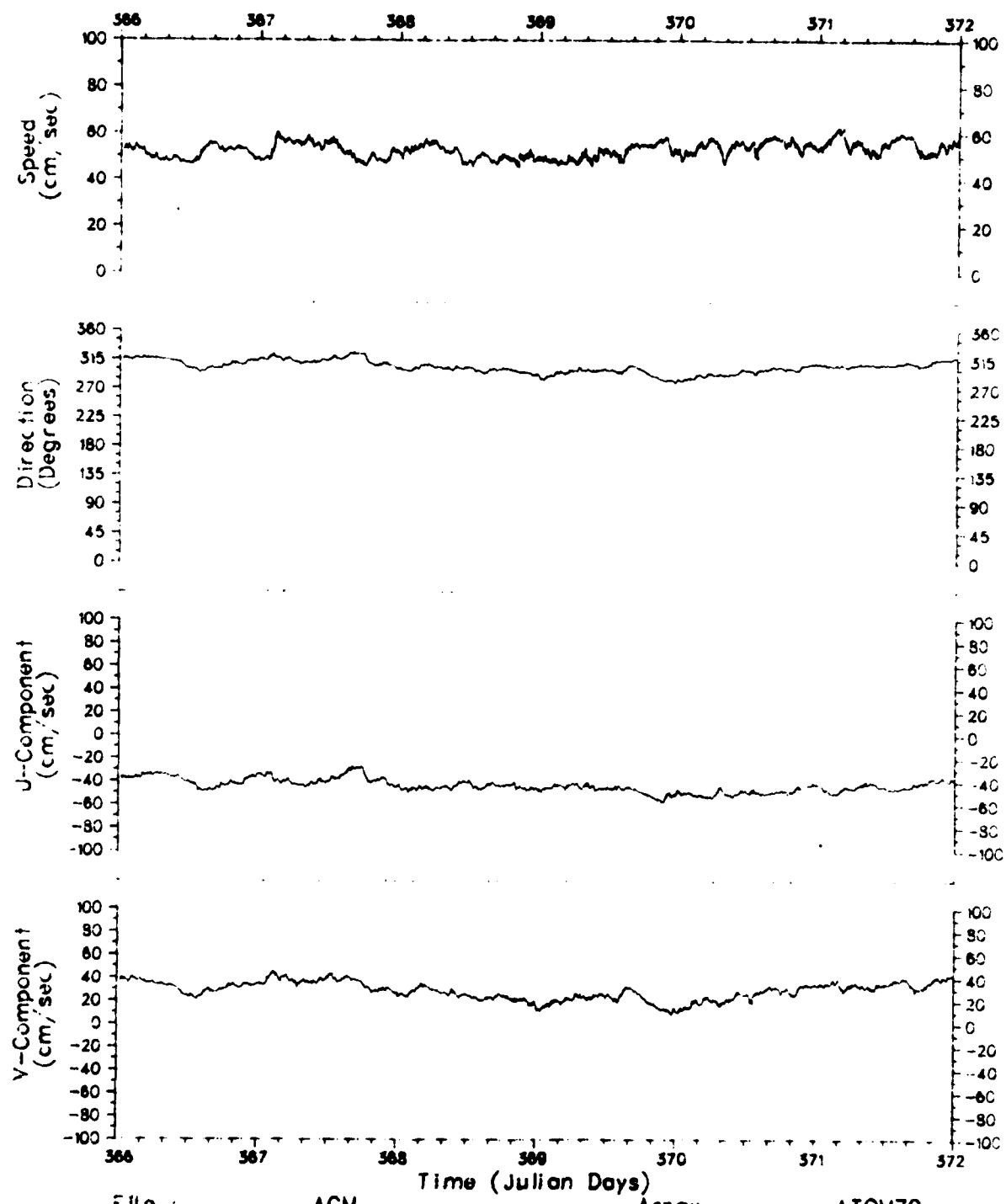
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000123
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1980

Figure 125.



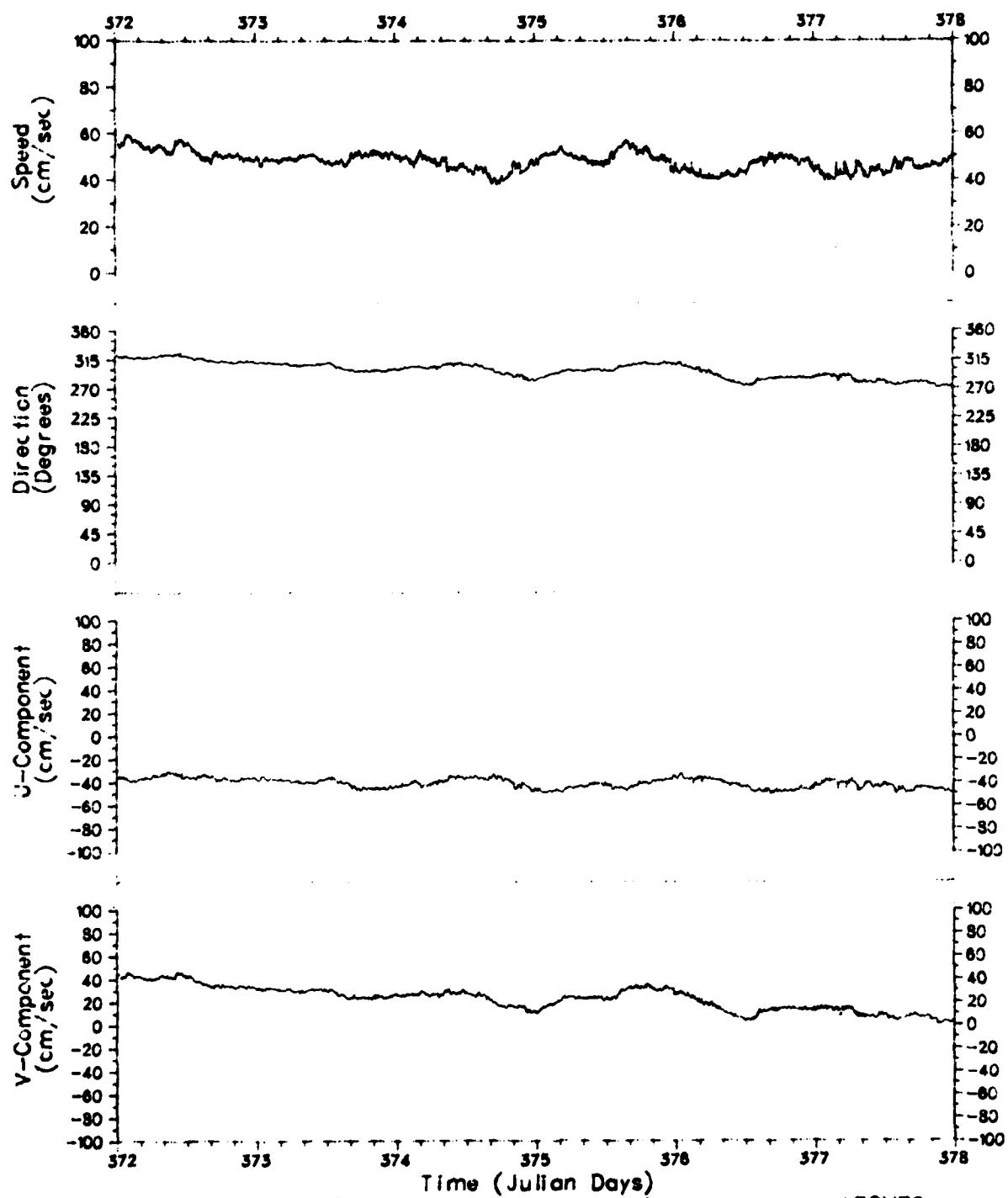
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000123
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1980

Figure 126.



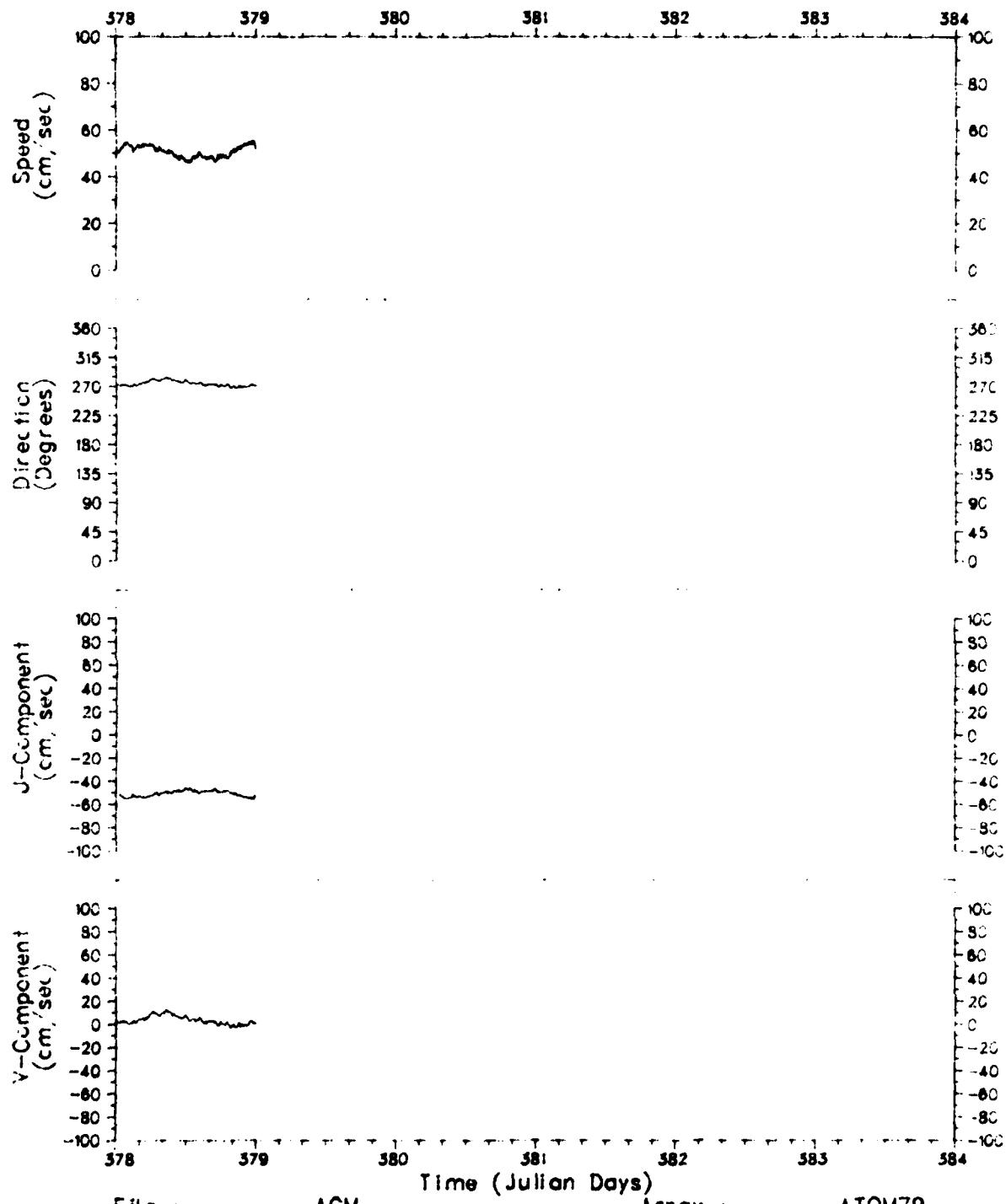
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000123
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 127.



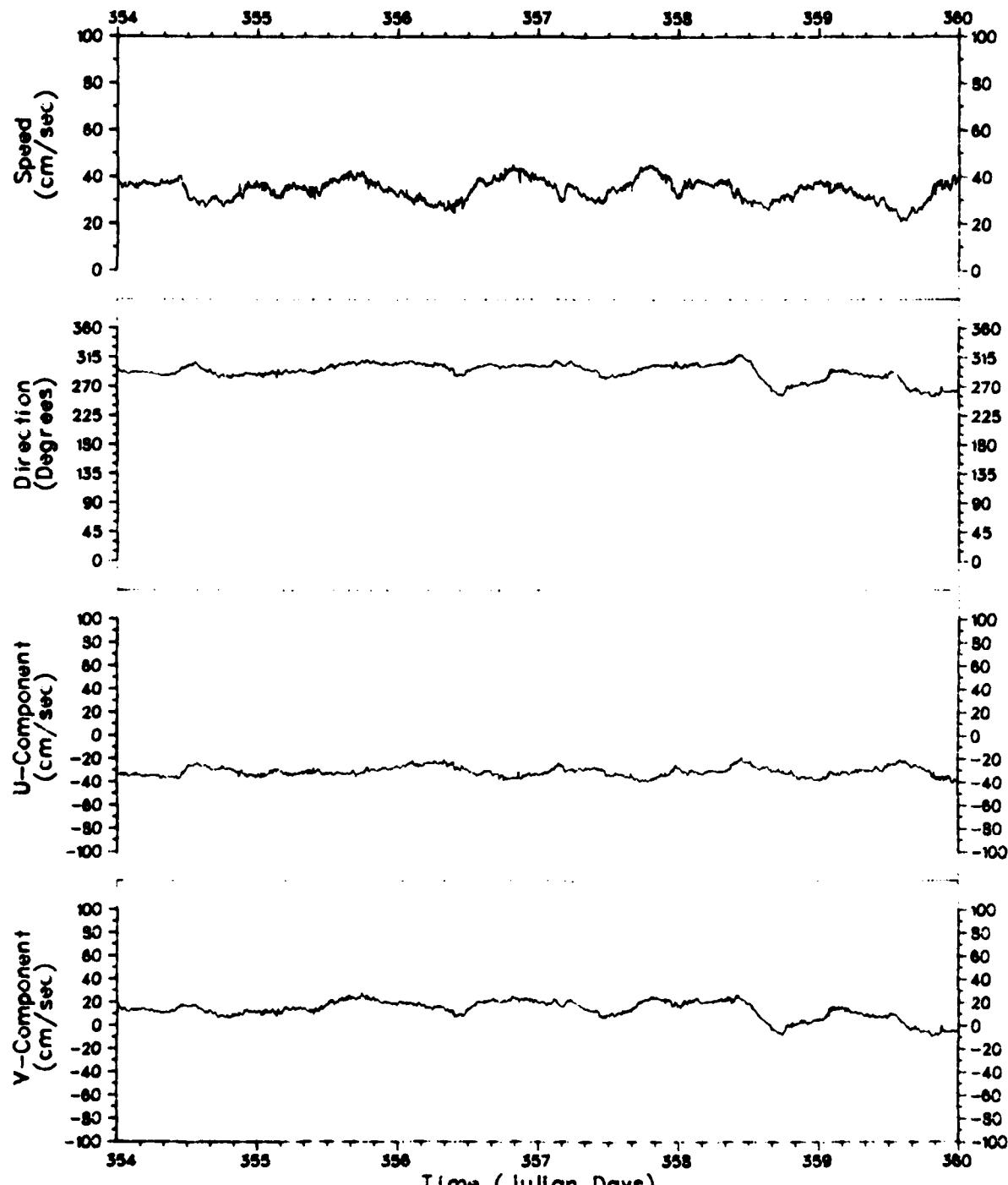
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000123
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744185	End :	14 01 1980

Figure 128.



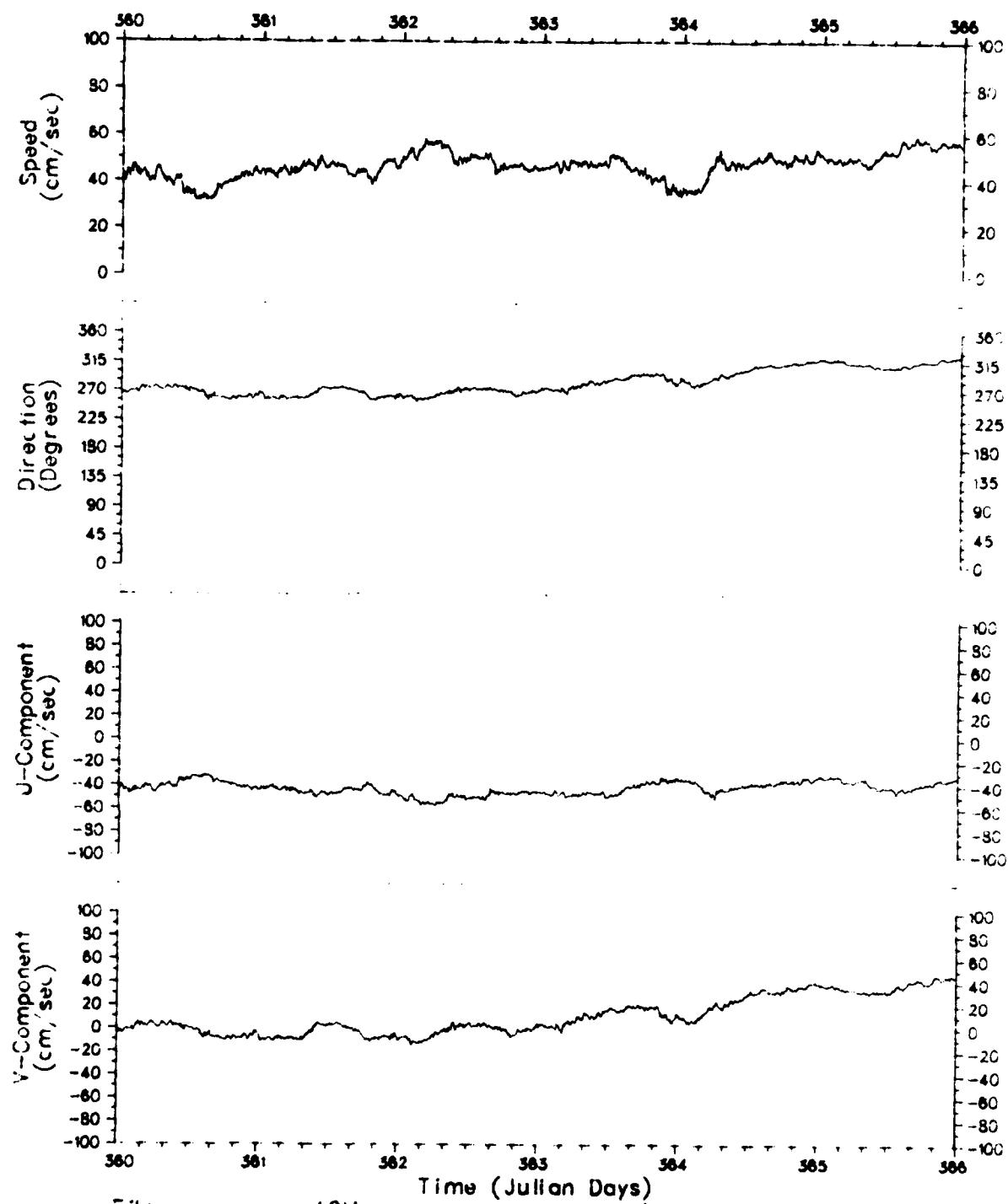
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000123
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1.0

Figure 129.



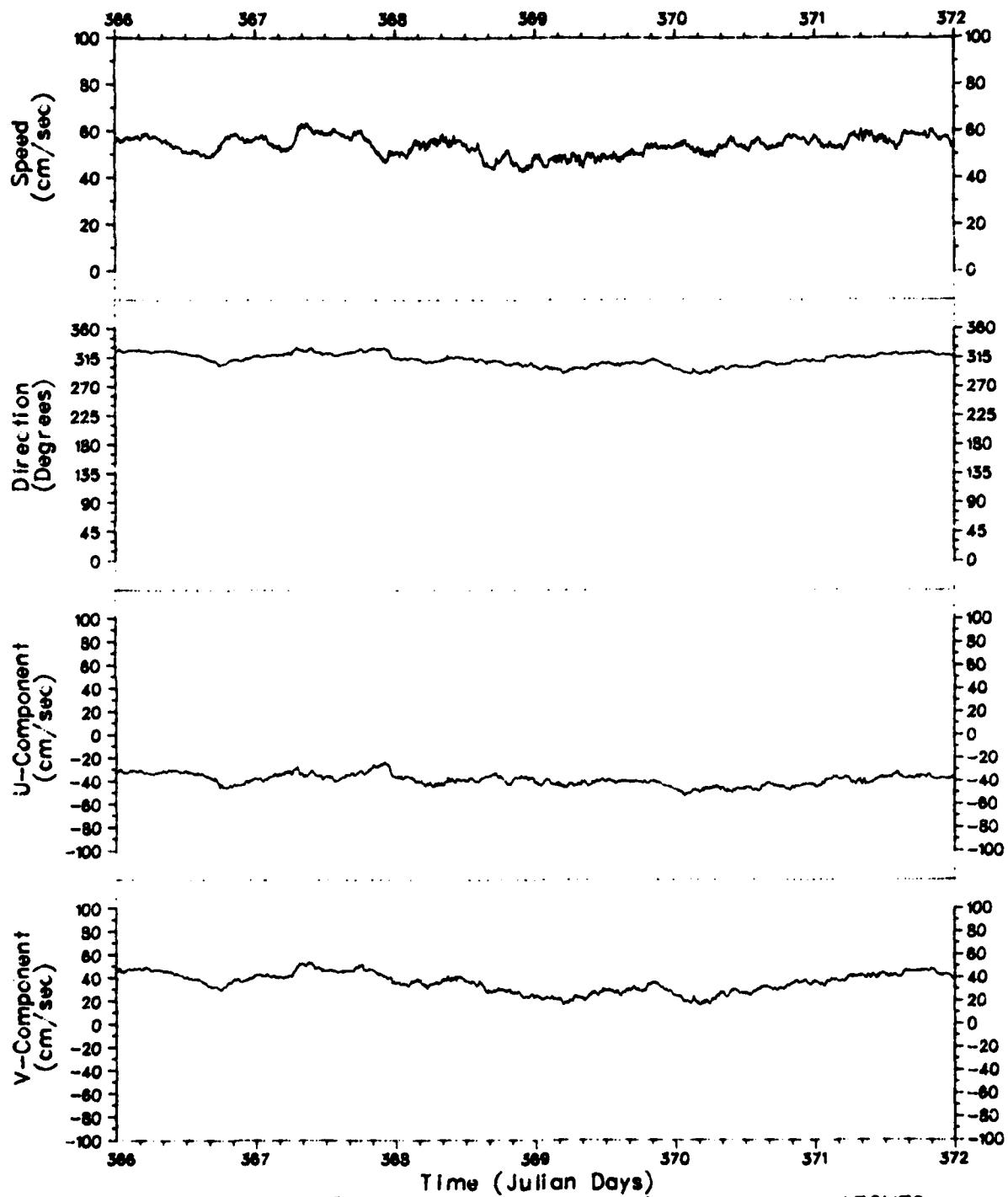
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000130
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1980

Figure 130.



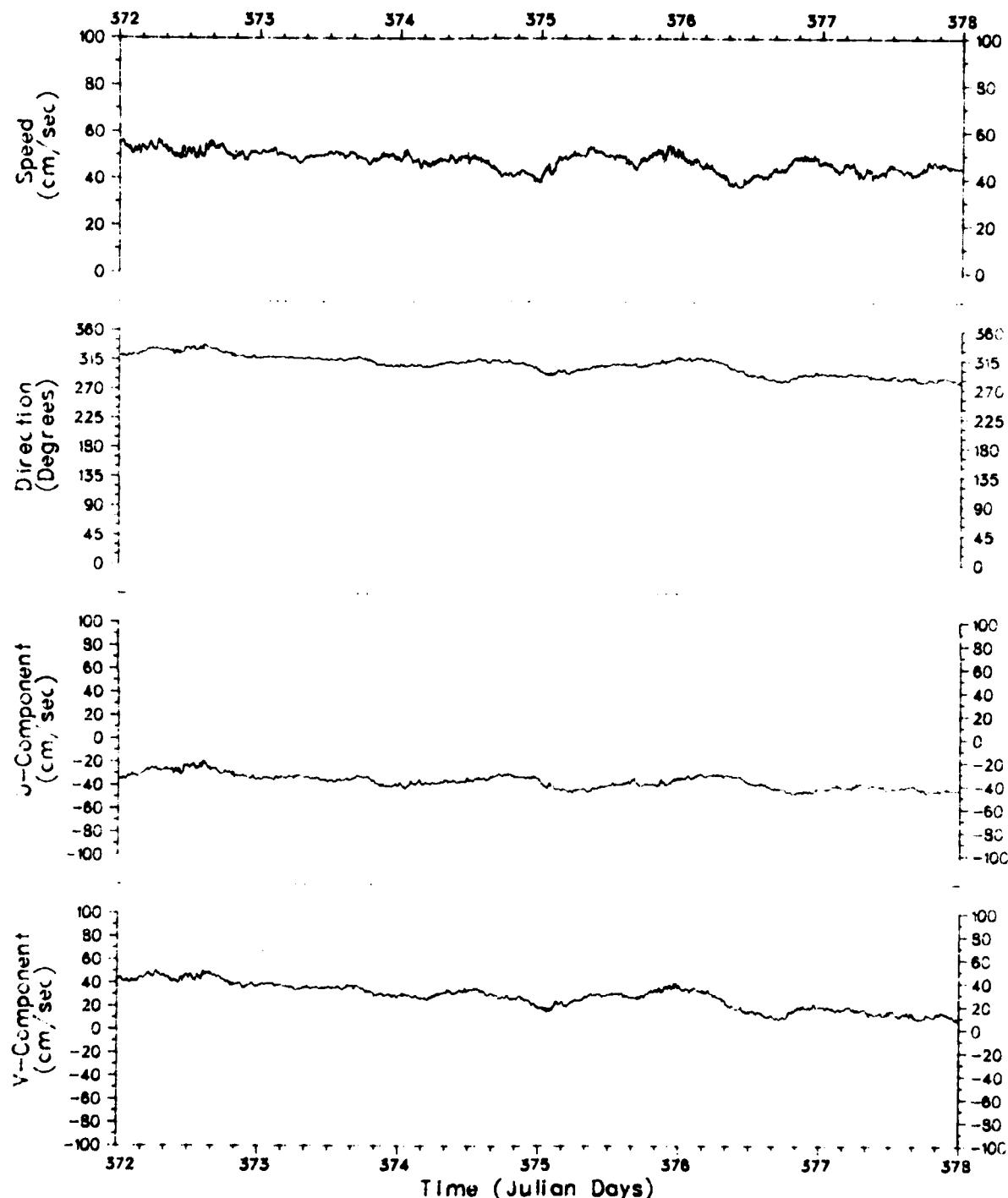
File : ACM Array : ATOM79
 Meter : 790100 Depth : 000130
 Latitude : 25.805555 Start : 19 12 1979
 Longitude : -89.744165 End : 14 01 1.0

Figure 131.



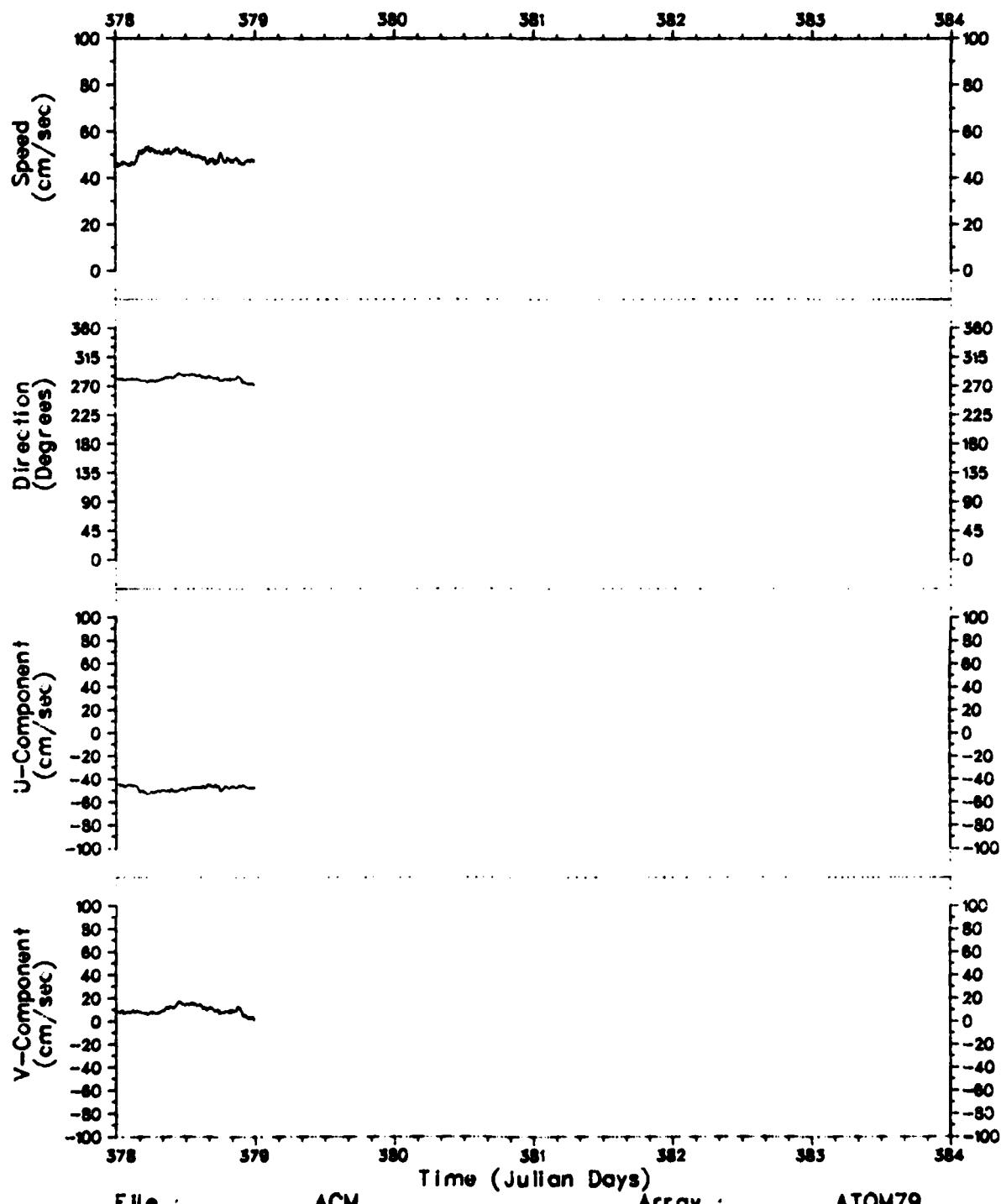
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000130
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1980

Figure 132.



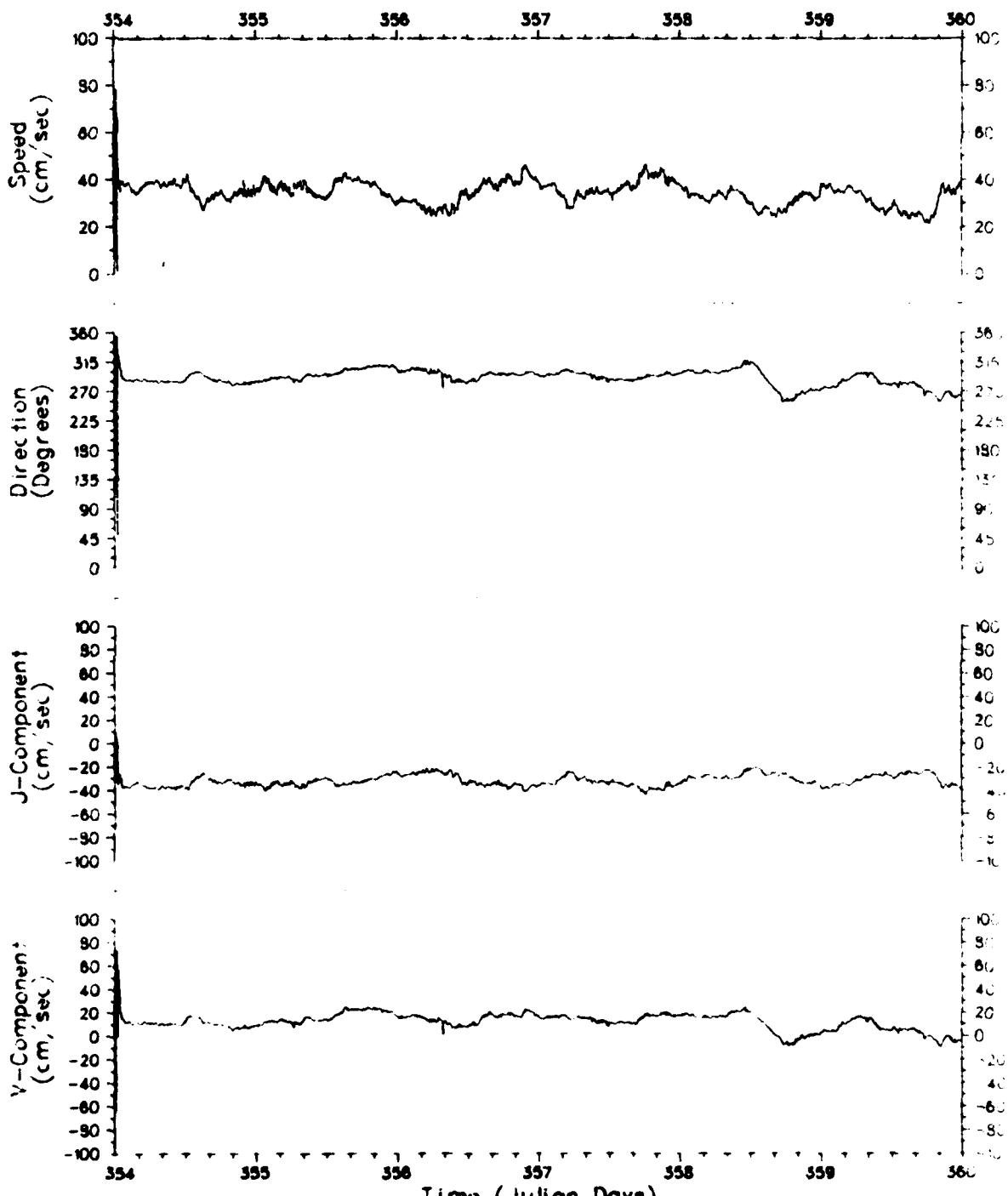
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000:30
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 133.



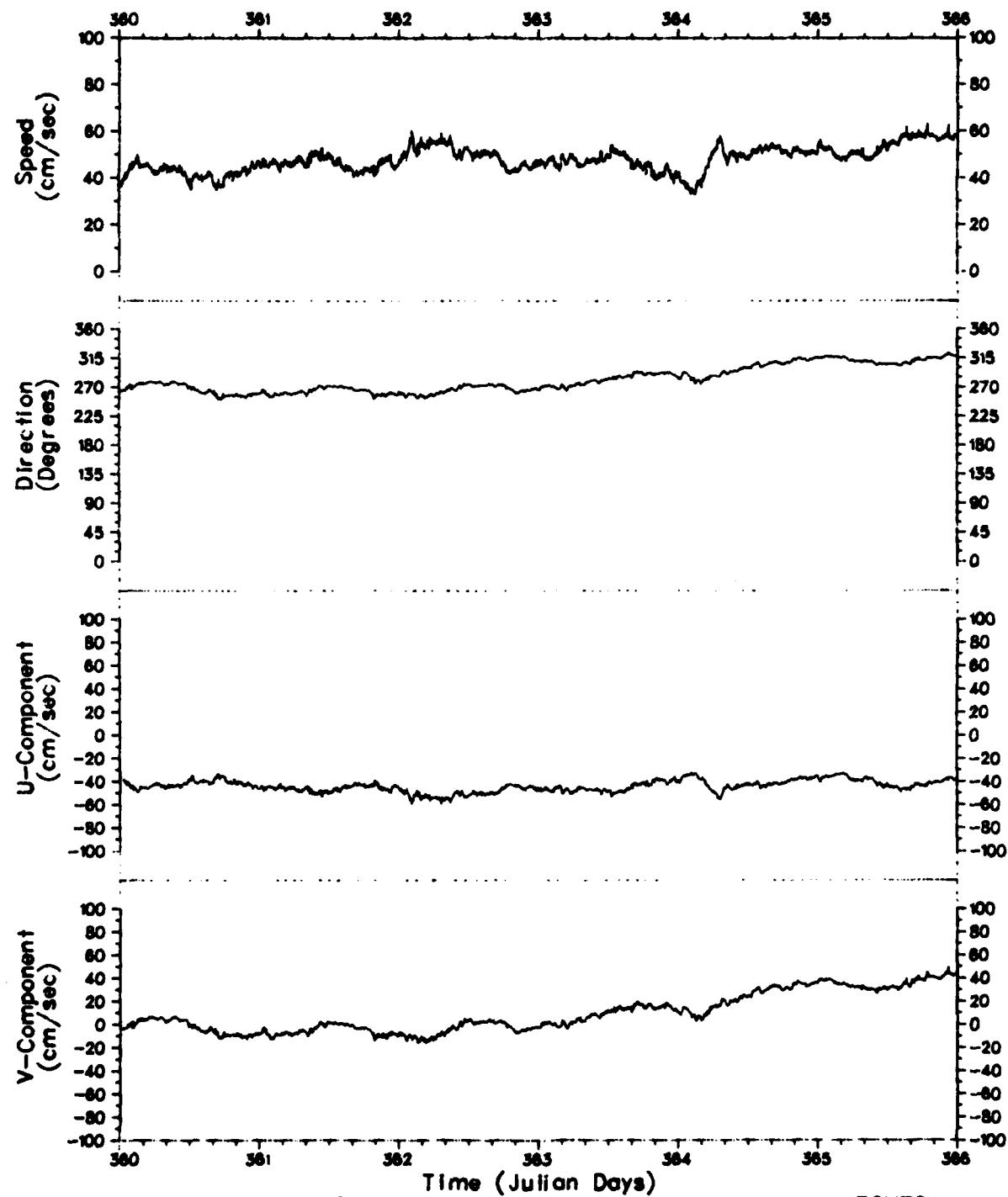
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000130
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1980

Figure 134.



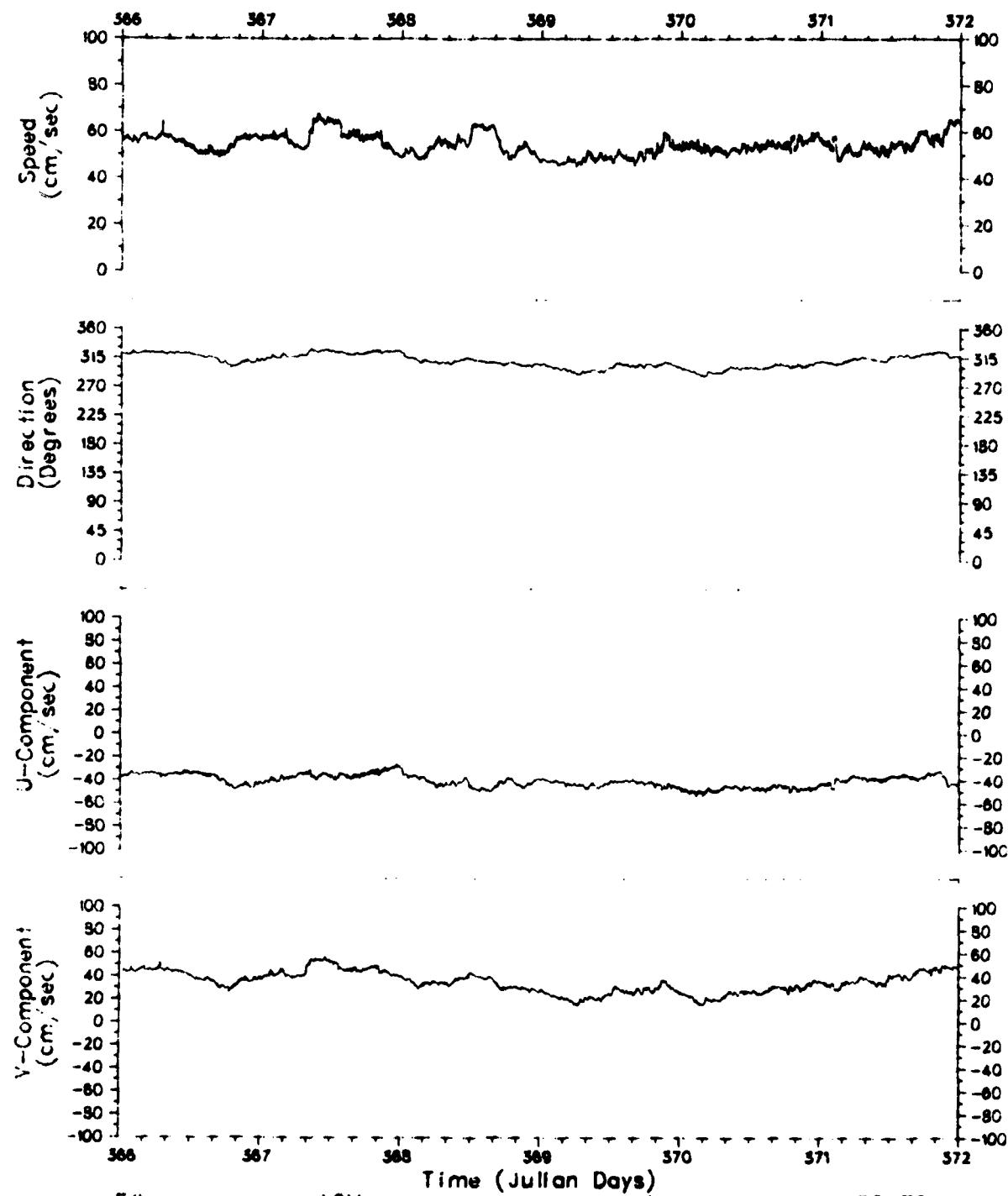
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000137
Latitude :	25.905555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 135.



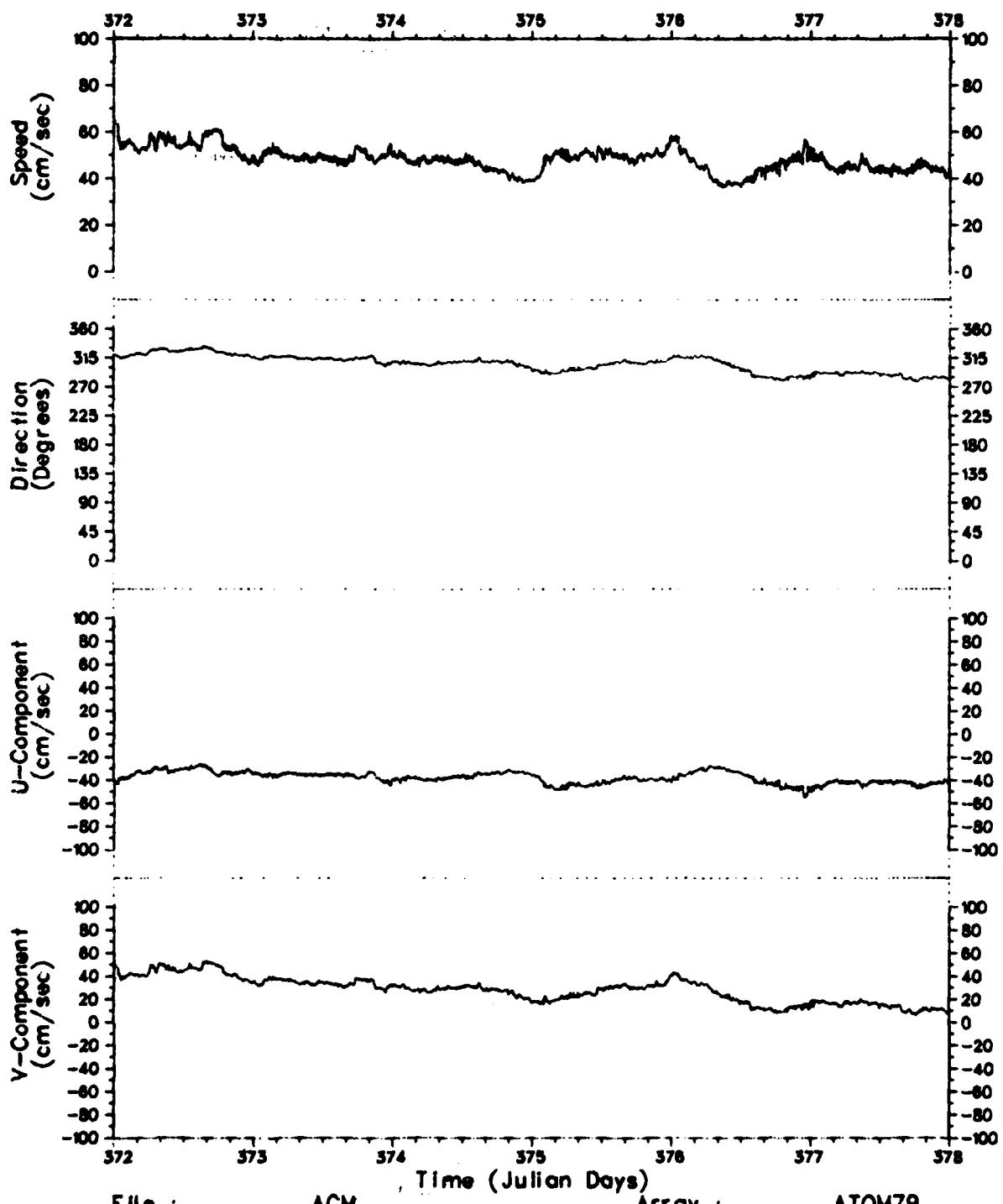
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000137
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 136.



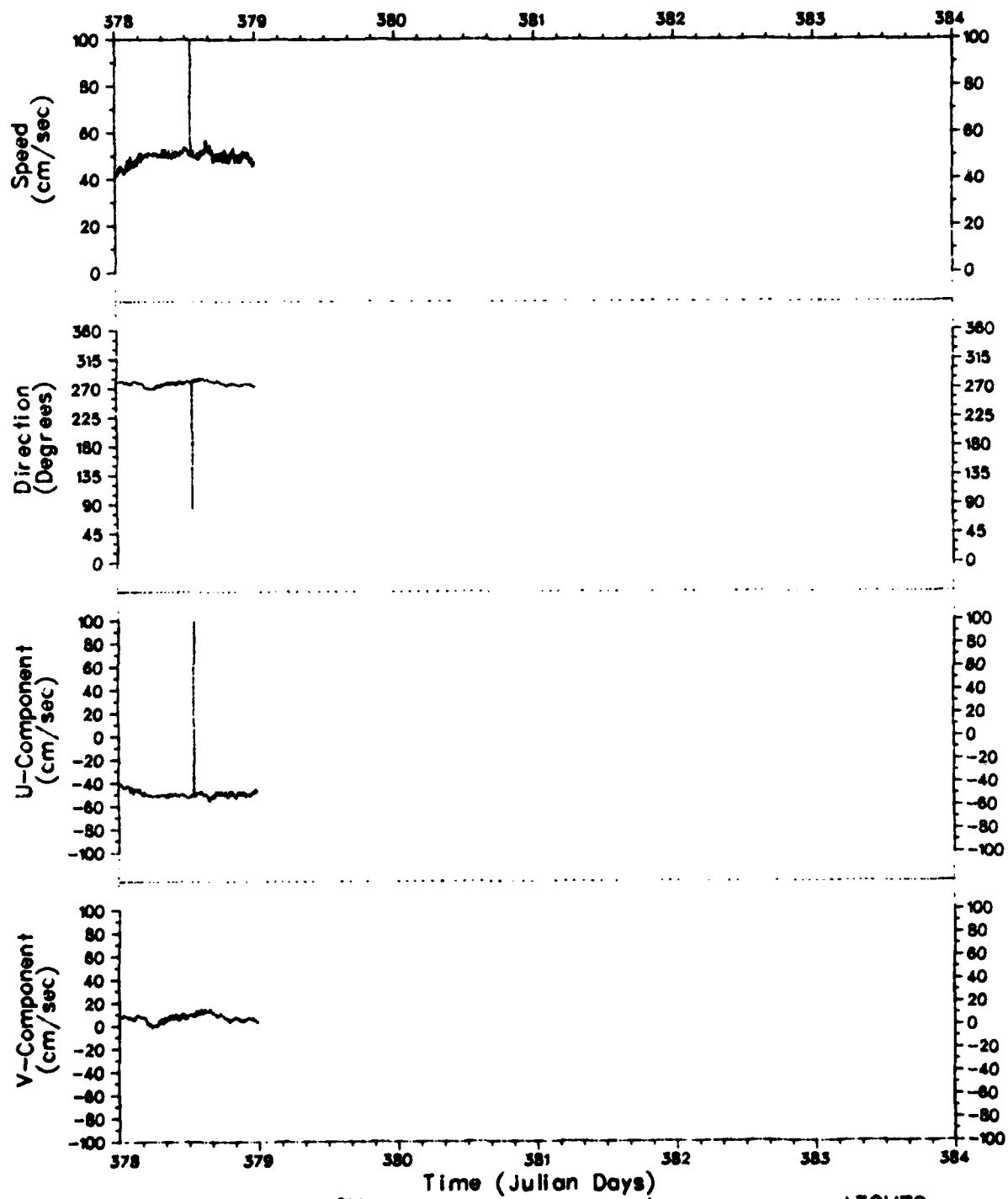
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000137
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 137.



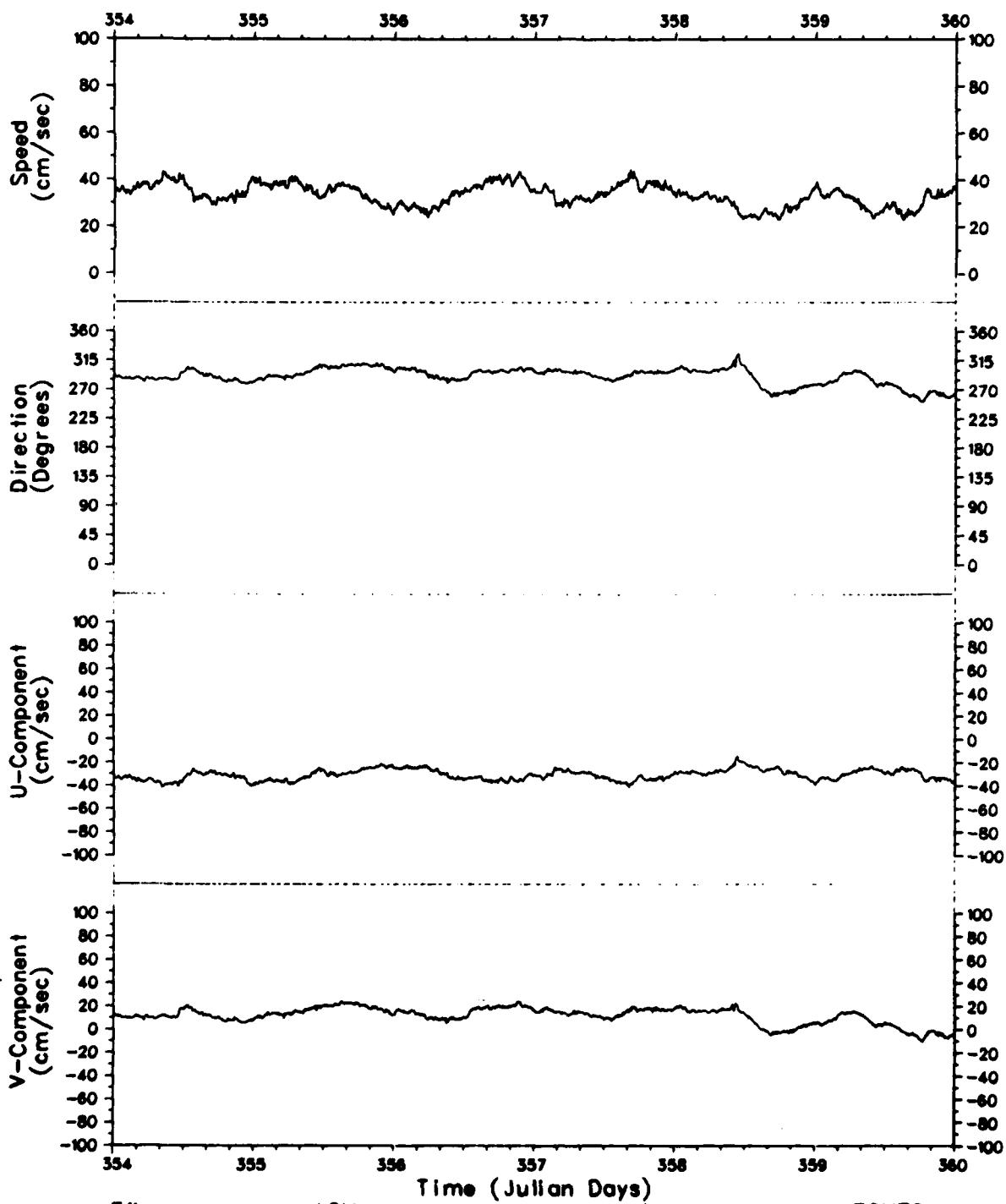
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000137
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744163	End :	14 01 1980

Figure 138.



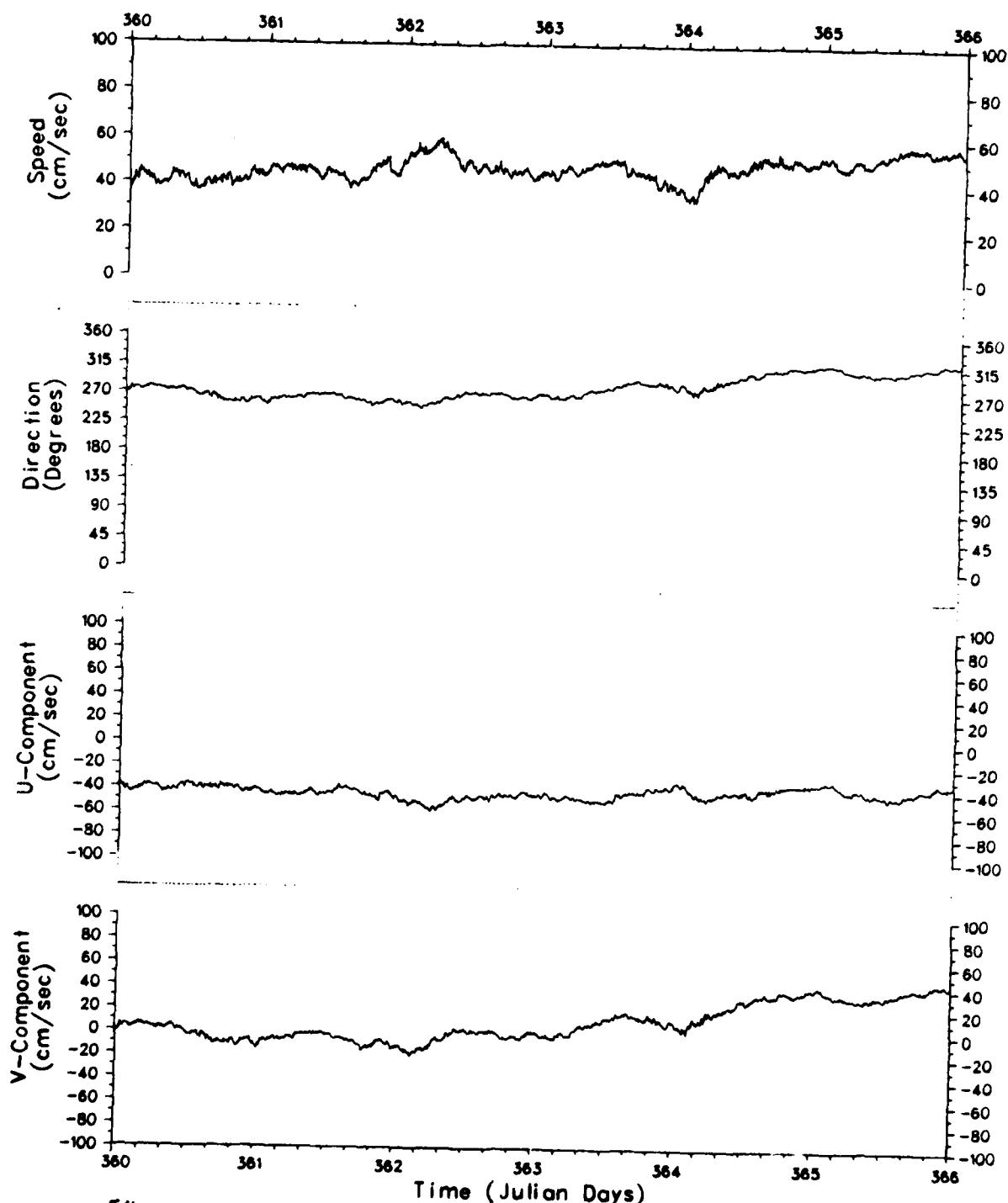
File : ACM Array : ATOM79
 Meter : 790100 Depth : 000137
 Latitude : 25.805555 Start : 19 12 1979
 Longitude : -89.744165 End : 14 01 1980

Figure 139.



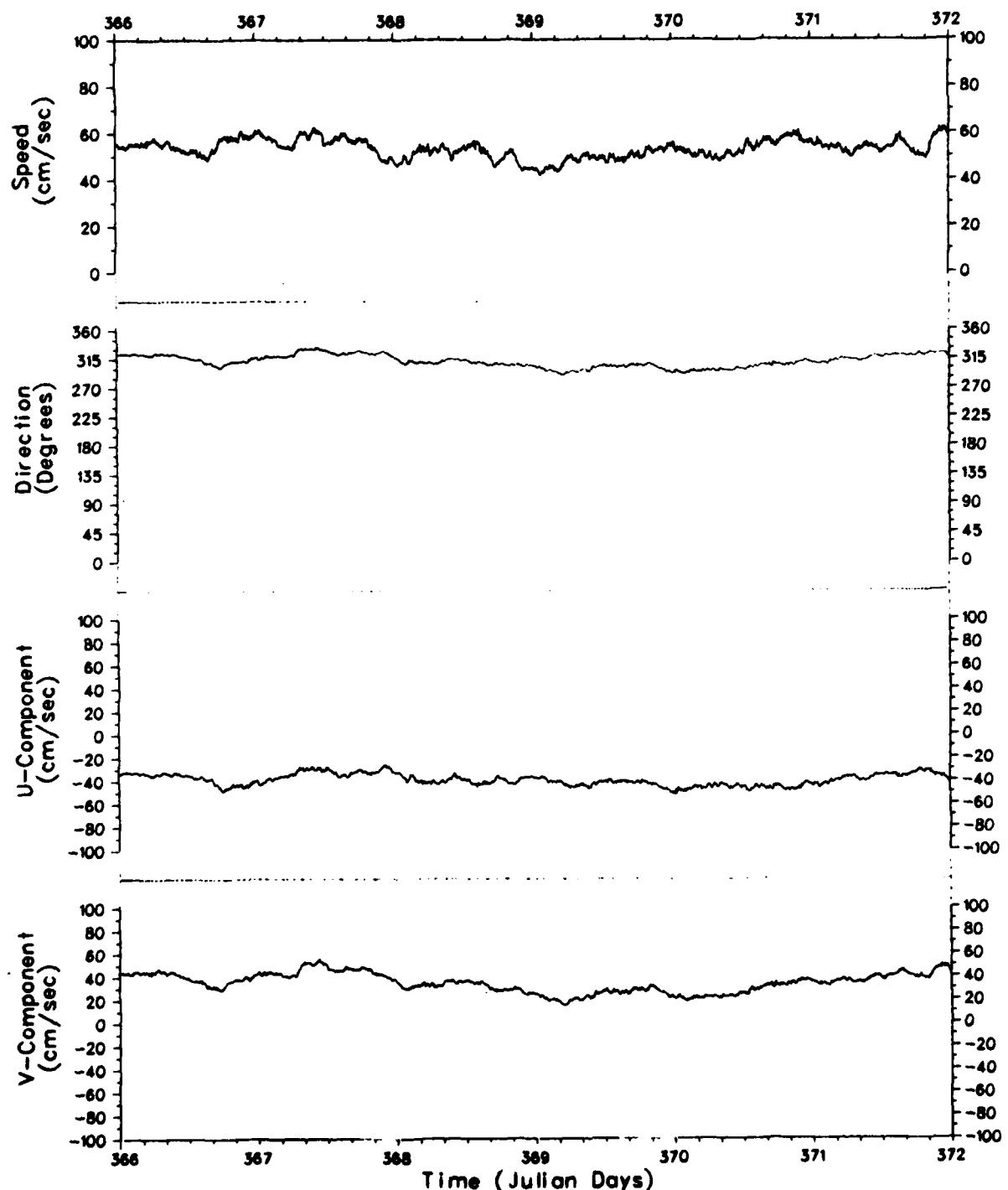
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000144
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 140.



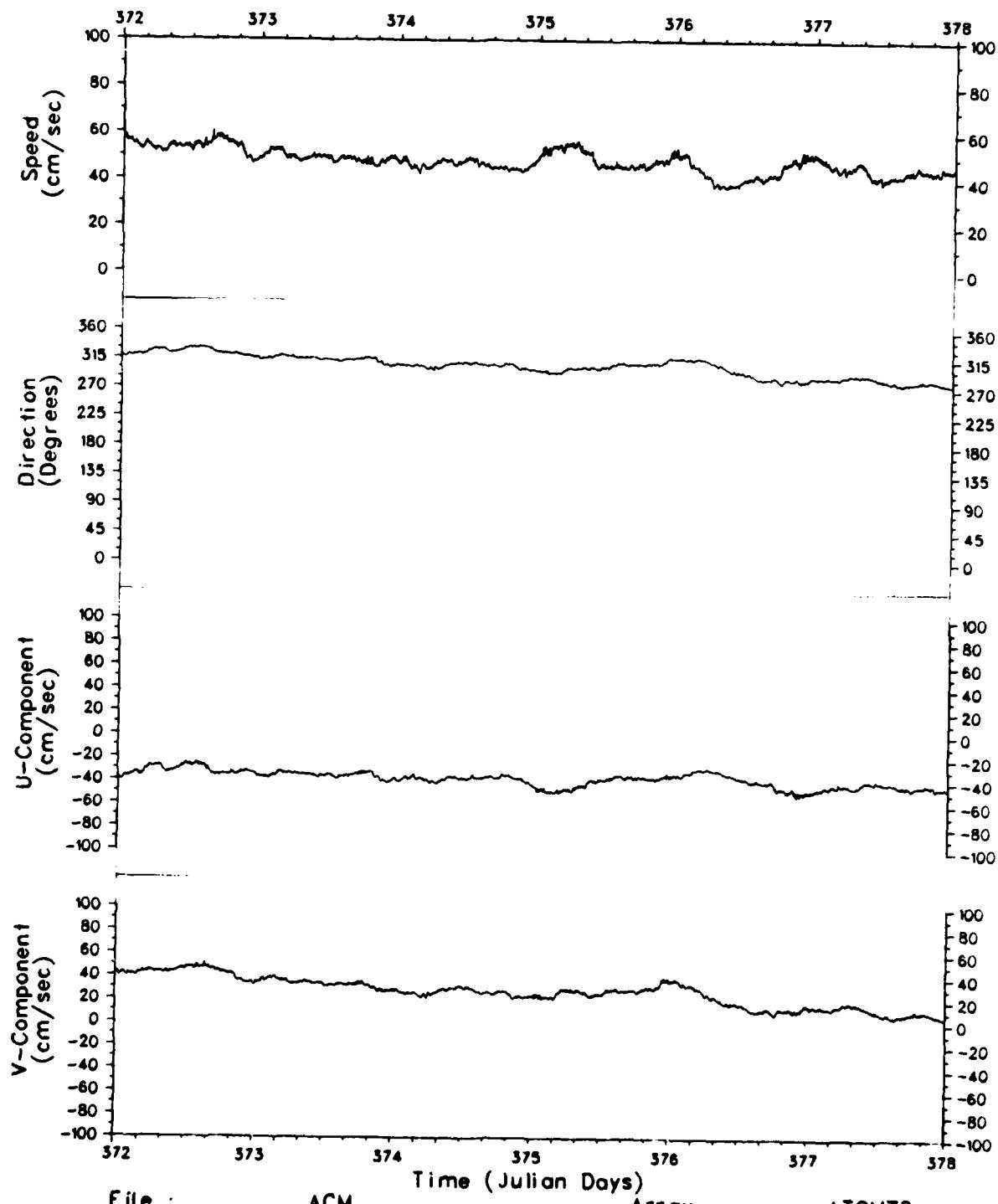
File : ACM
 Meter : 790100
 Latitude : 25.805555
 Longitude : -89.744165
 Array : ATOM79
 Depth : 000144
 Start : 19 12 1979
 End : 14 01 1980

Figure 141.



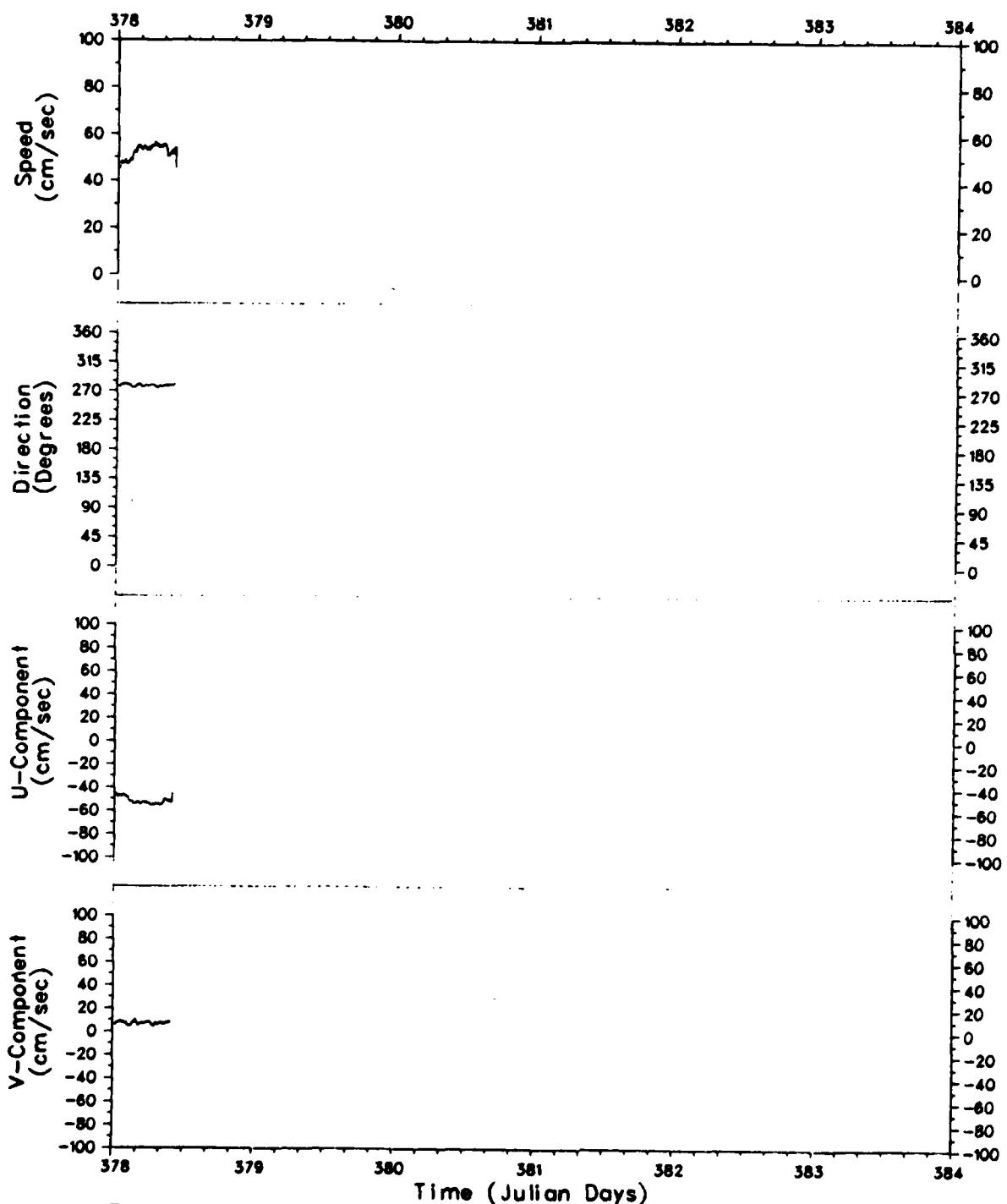
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000144
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 142.



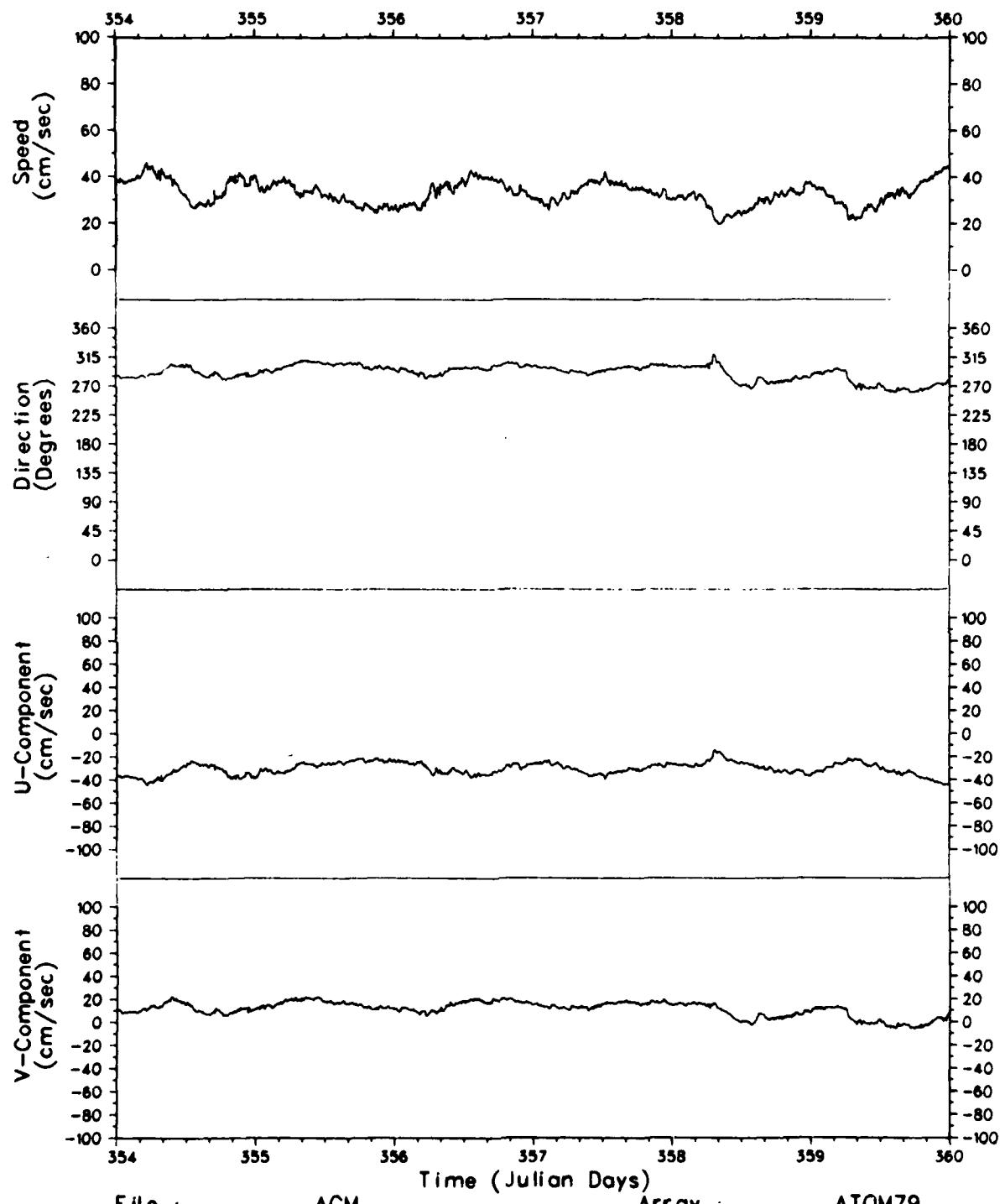
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000144
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 143,



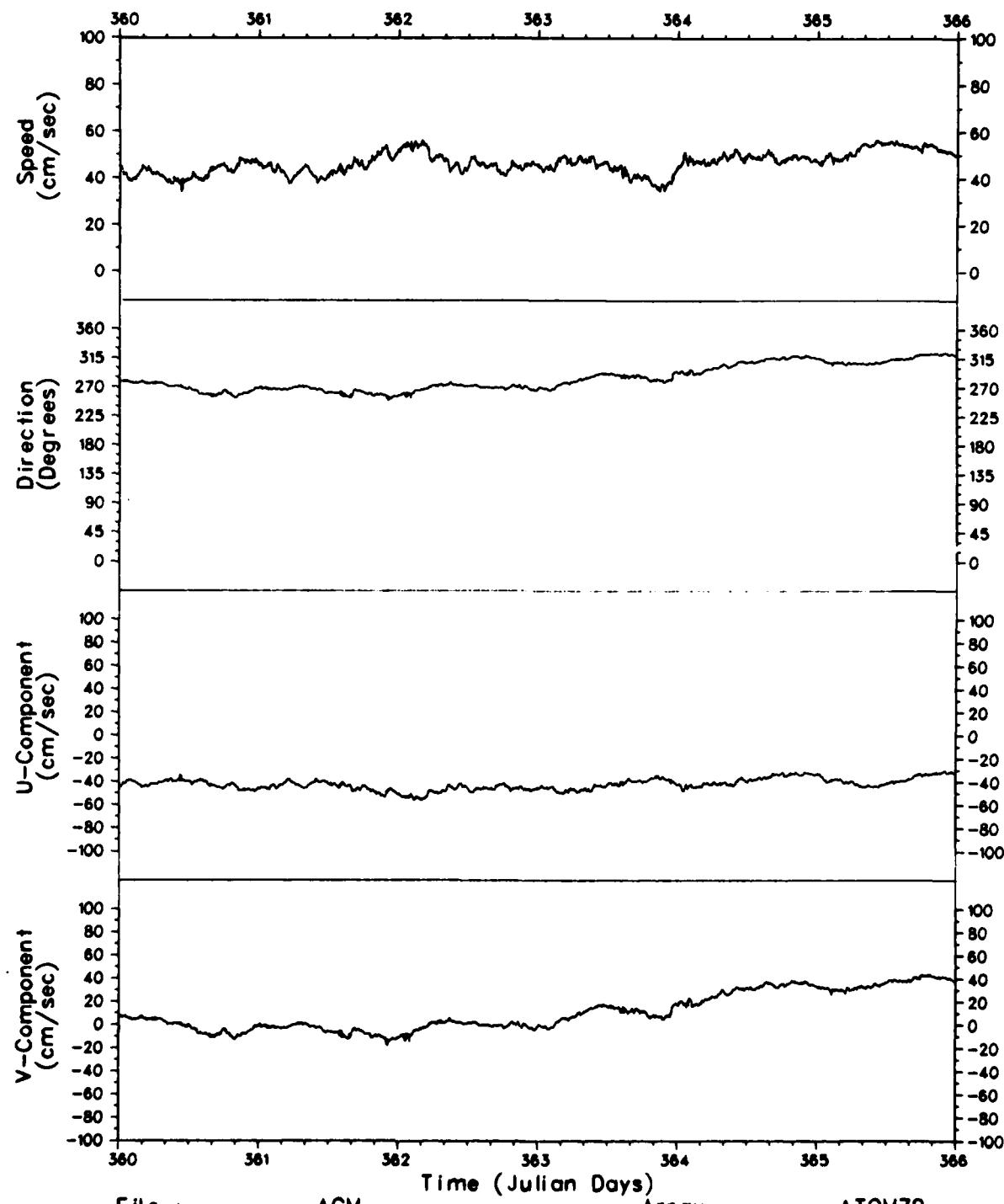
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000144
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 144.



File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000151
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1.30

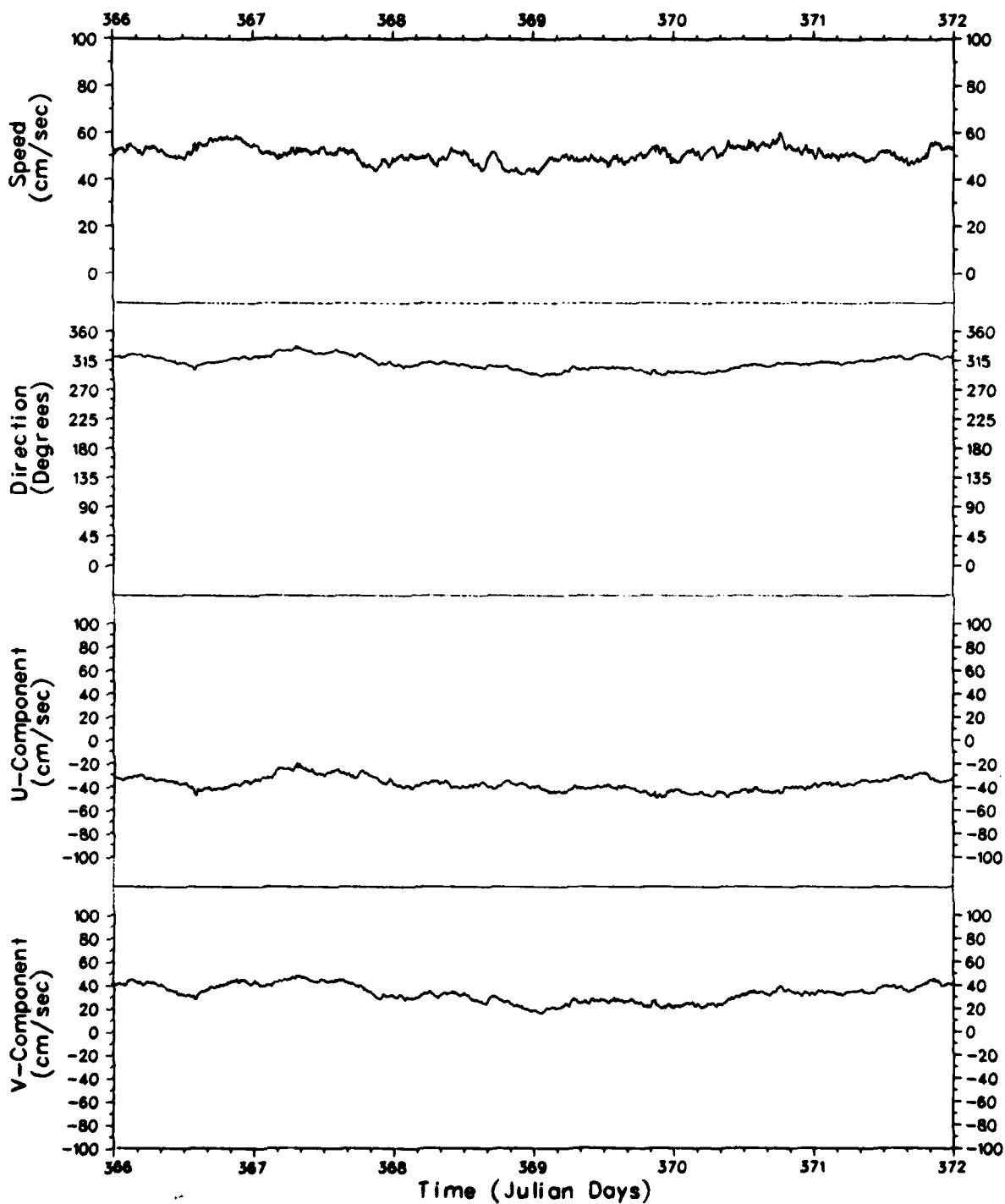
Figure 145.



File : ACM
 Meter : 790100
 Latitude : 25.805555
 Longitude : -89 744165

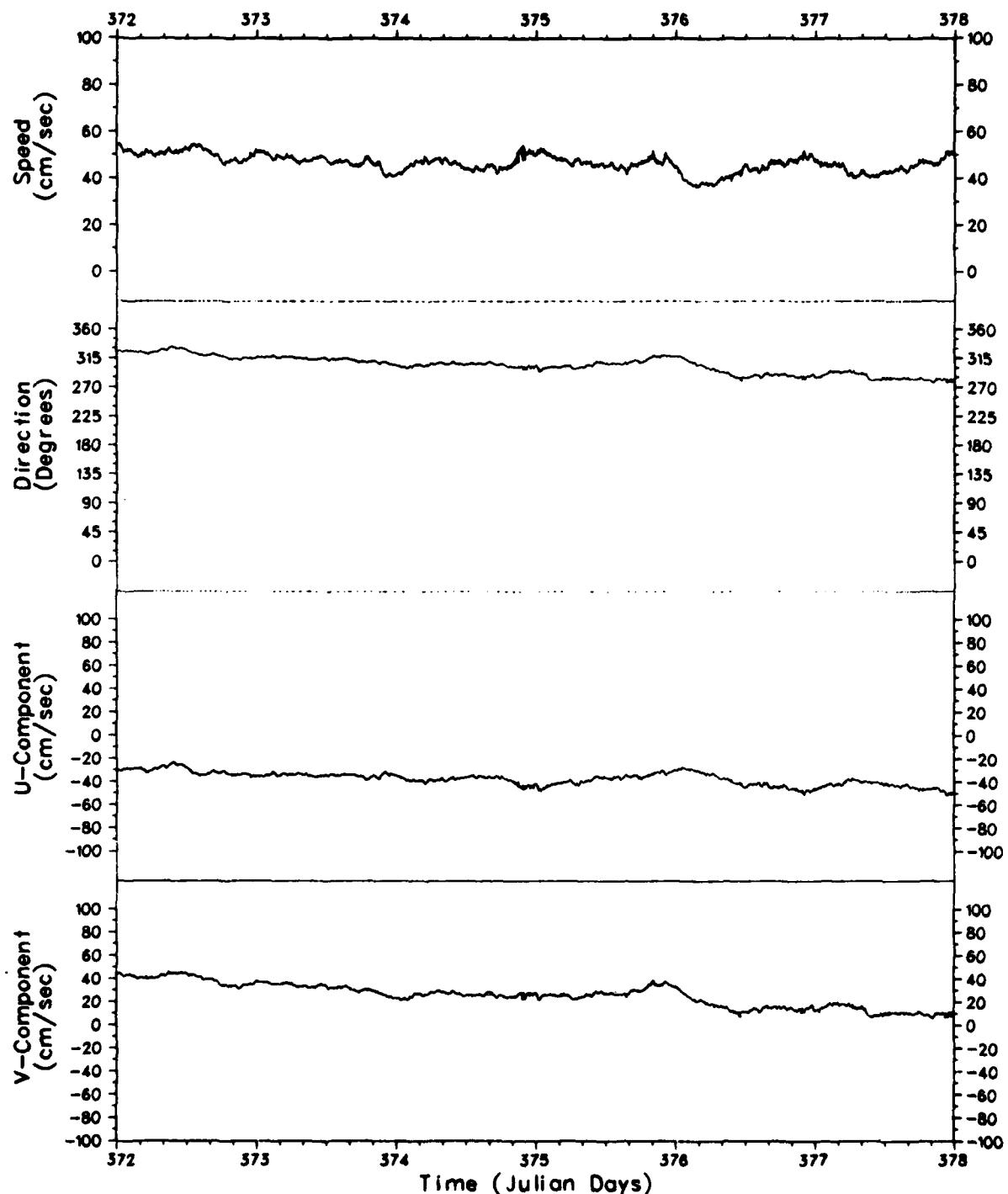
Array : ATOM79 Depth : 000151 Start : 19 12 1979 End : 14 01 1980	D
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Figure 146.



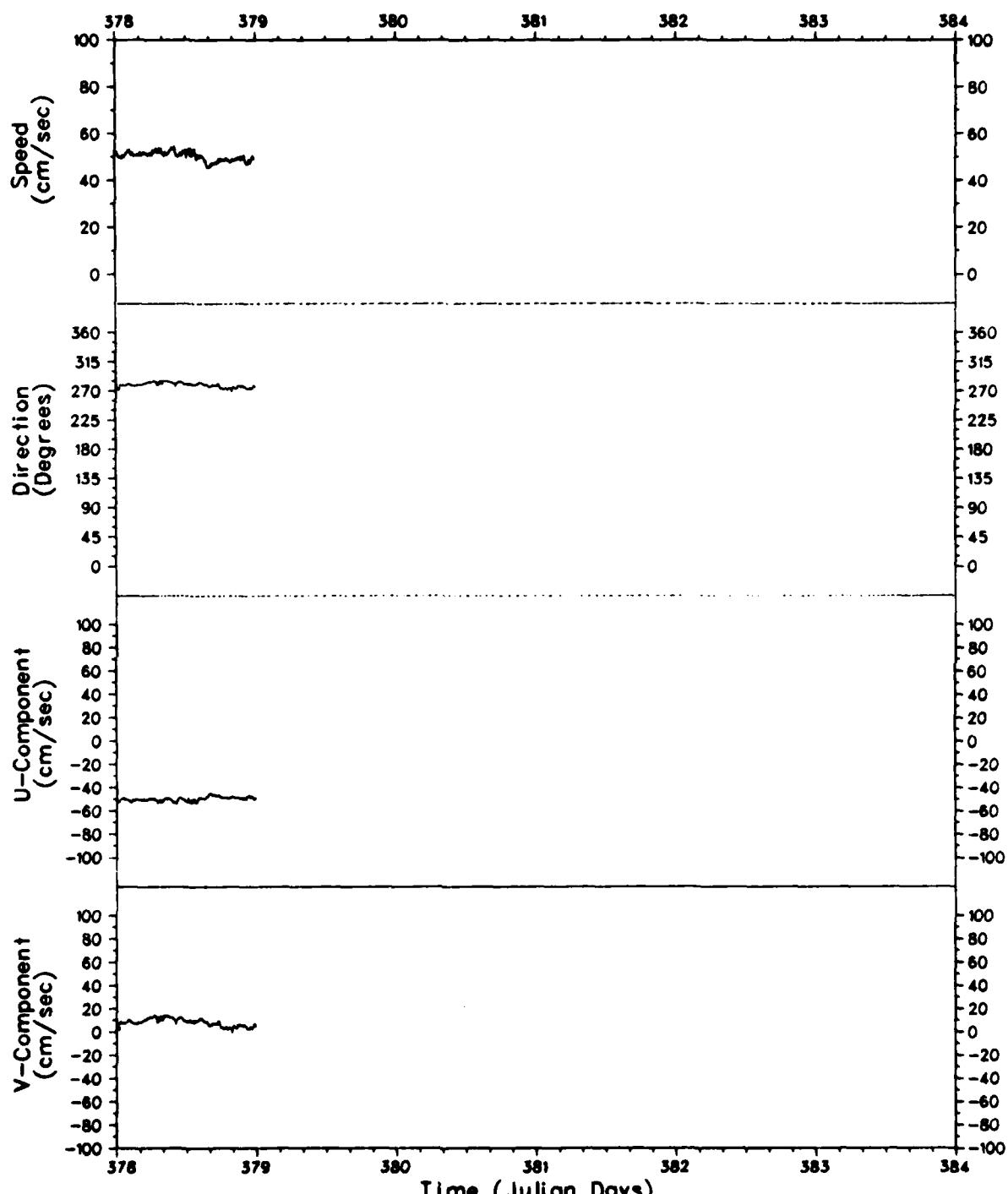
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000151
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 147.



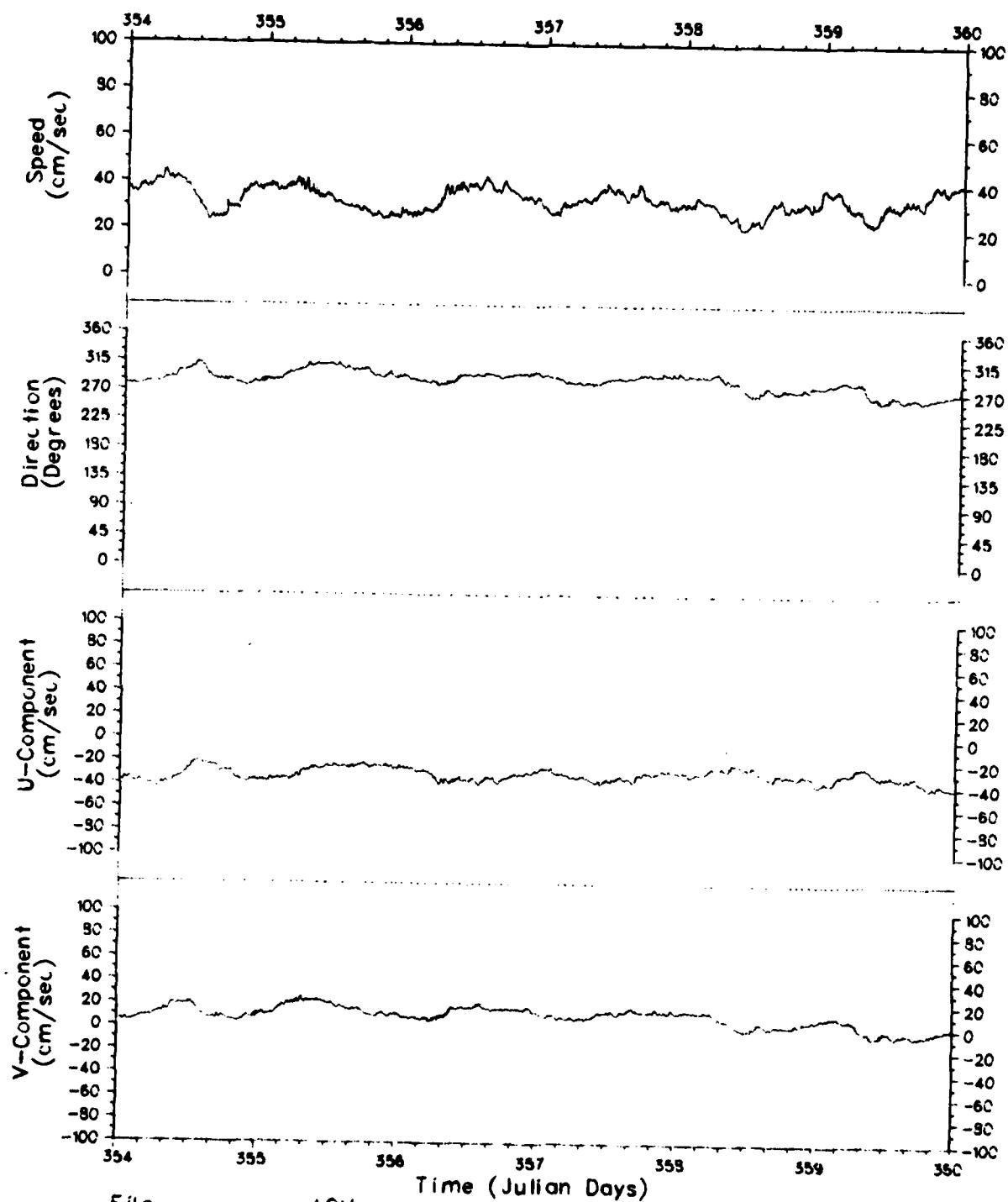
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000151
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 148.



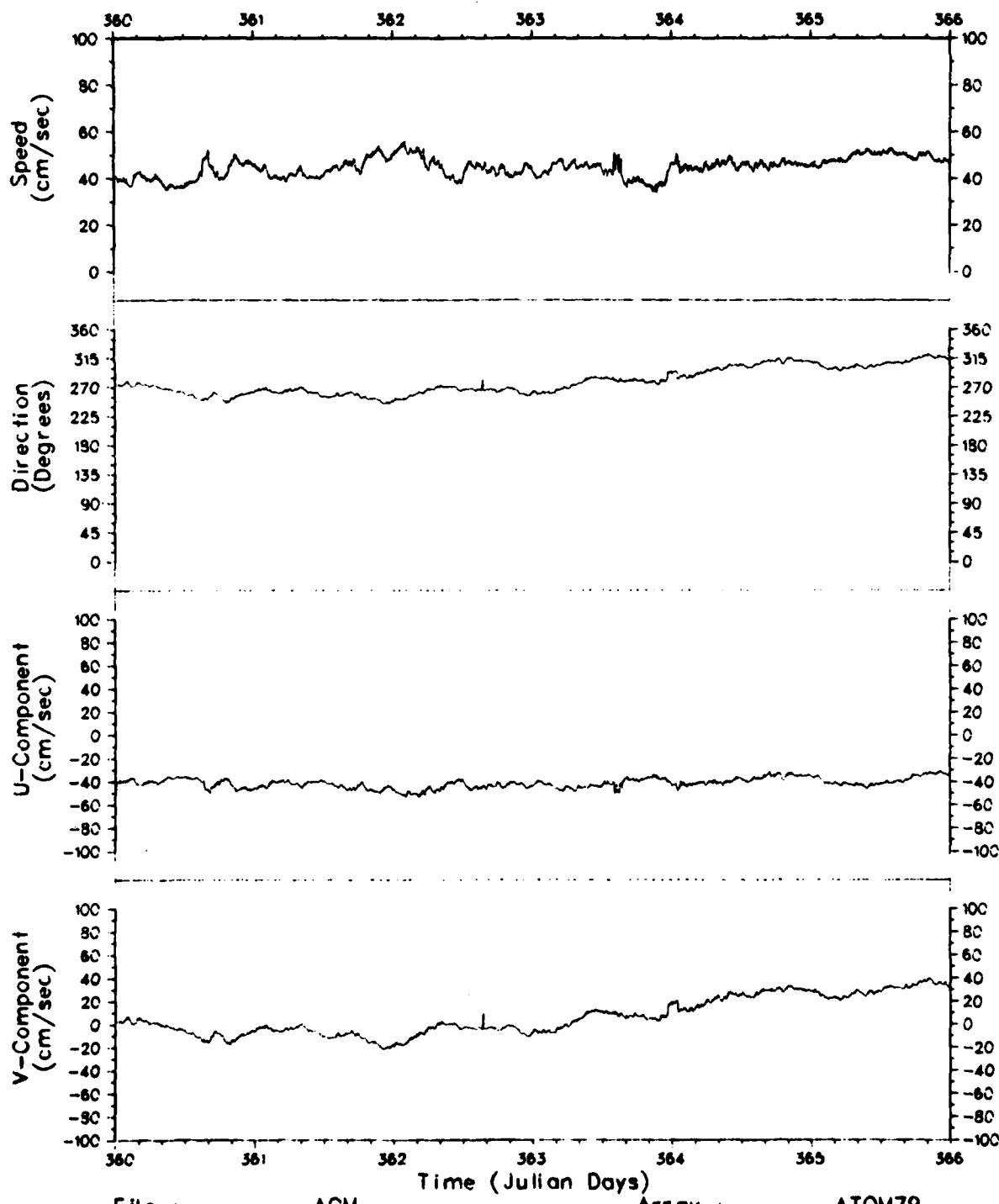
File : ACM Array : ATOM79
 Meter : 790100 Depth : 000151
 Latitude : 25.805555 Start : 19 12 1979
 Longitude : -89.744165 End : 14 01 1980

Figure 149.



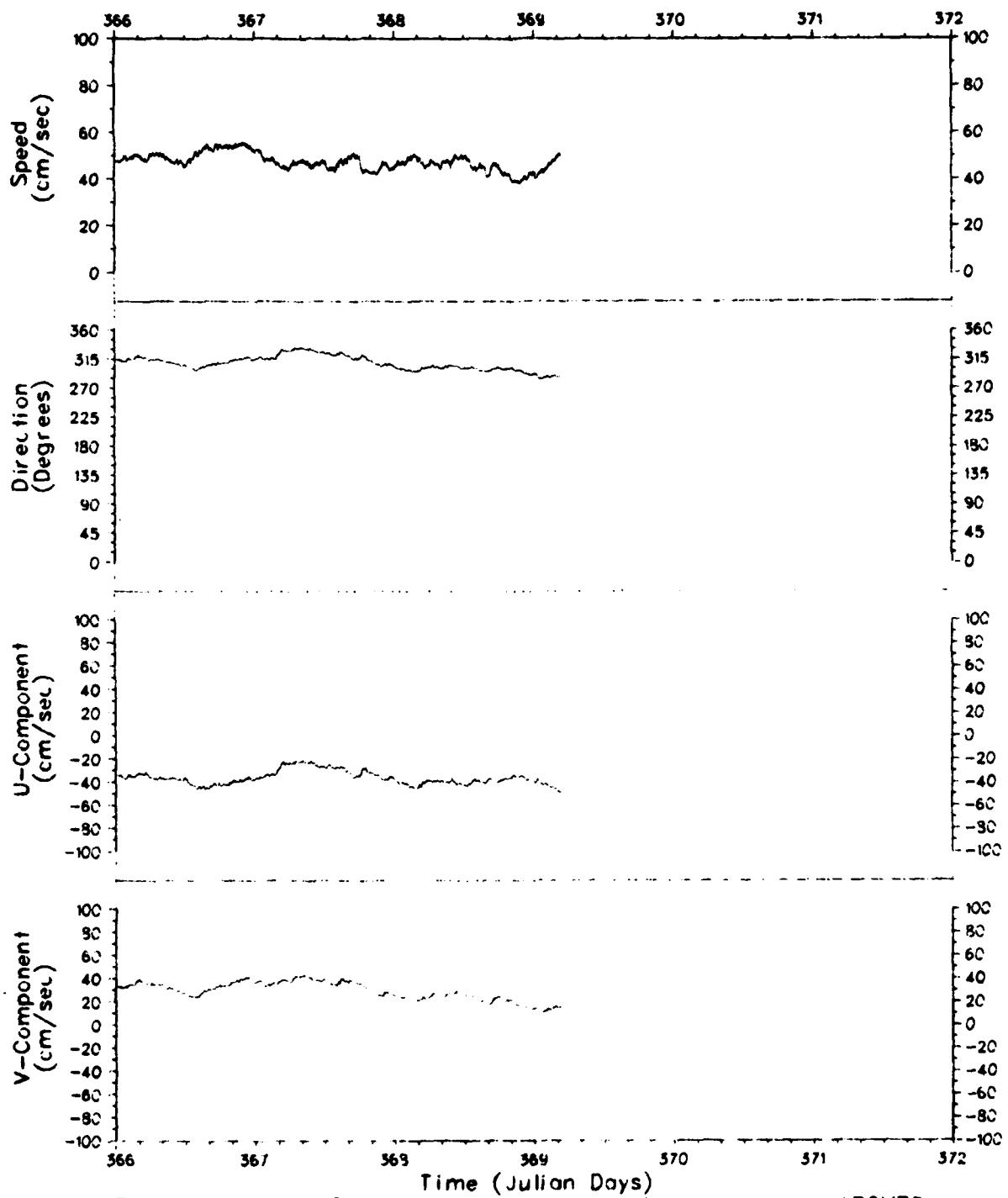
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000158
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 150.



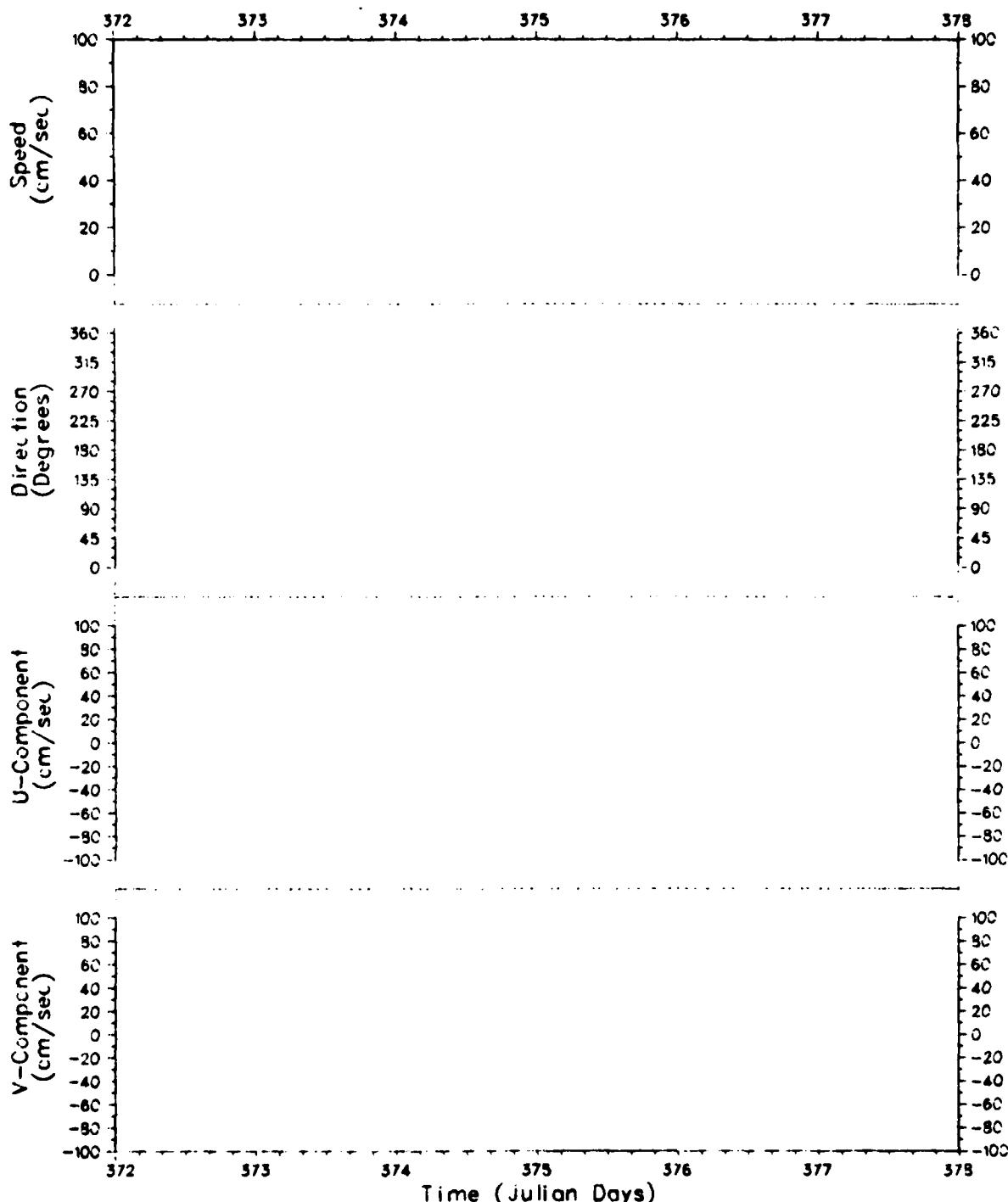
File :	ACM	Array :	ATOM79
Meter :	790100	Depth	000158
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1980

Figure 151.



File :	ACM	Array	ATOM79
Meter :	790100	Depth	000158
Latitude :	25.805555	Start	19 12 1979
Longitude :	-89.744165	End	14 01 1980

Figure 152.



File :	ACM	Array :	ATOM79
Meter :	790100	Depth	000158
Latitude :	25 805555	Start :	19 12 1979
Longitude	-89 744165	End :	14 01 1980

Figure 153.

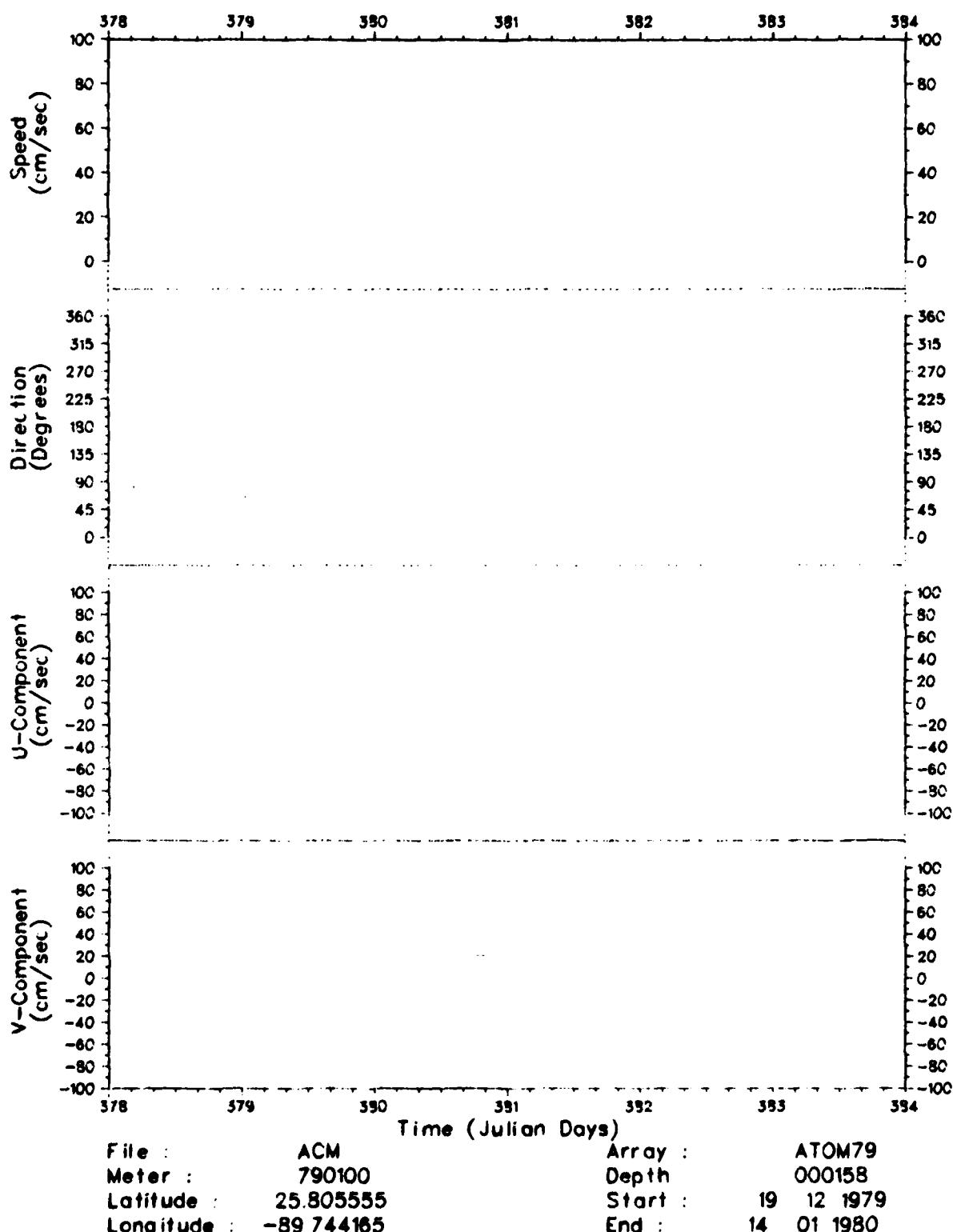
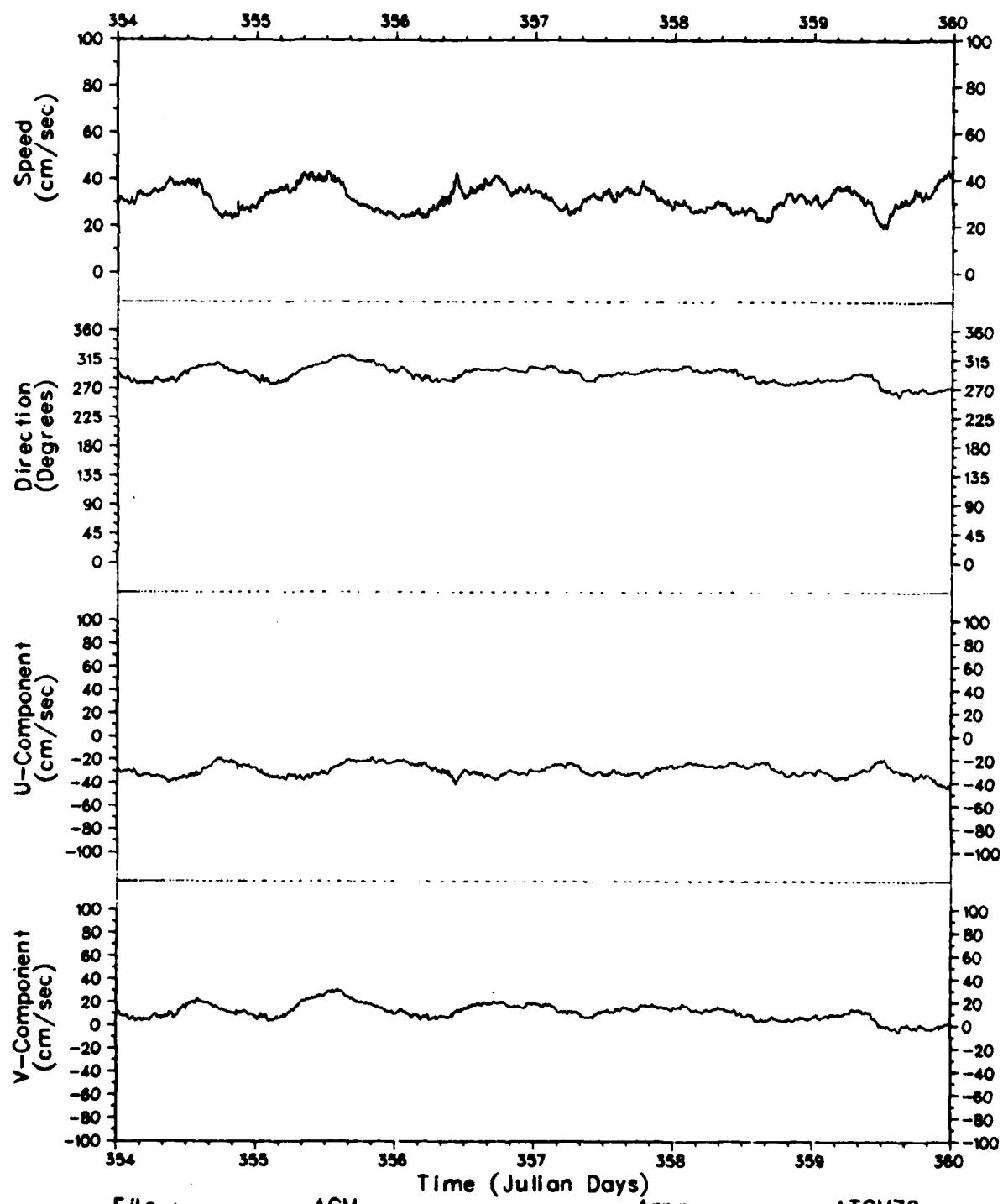
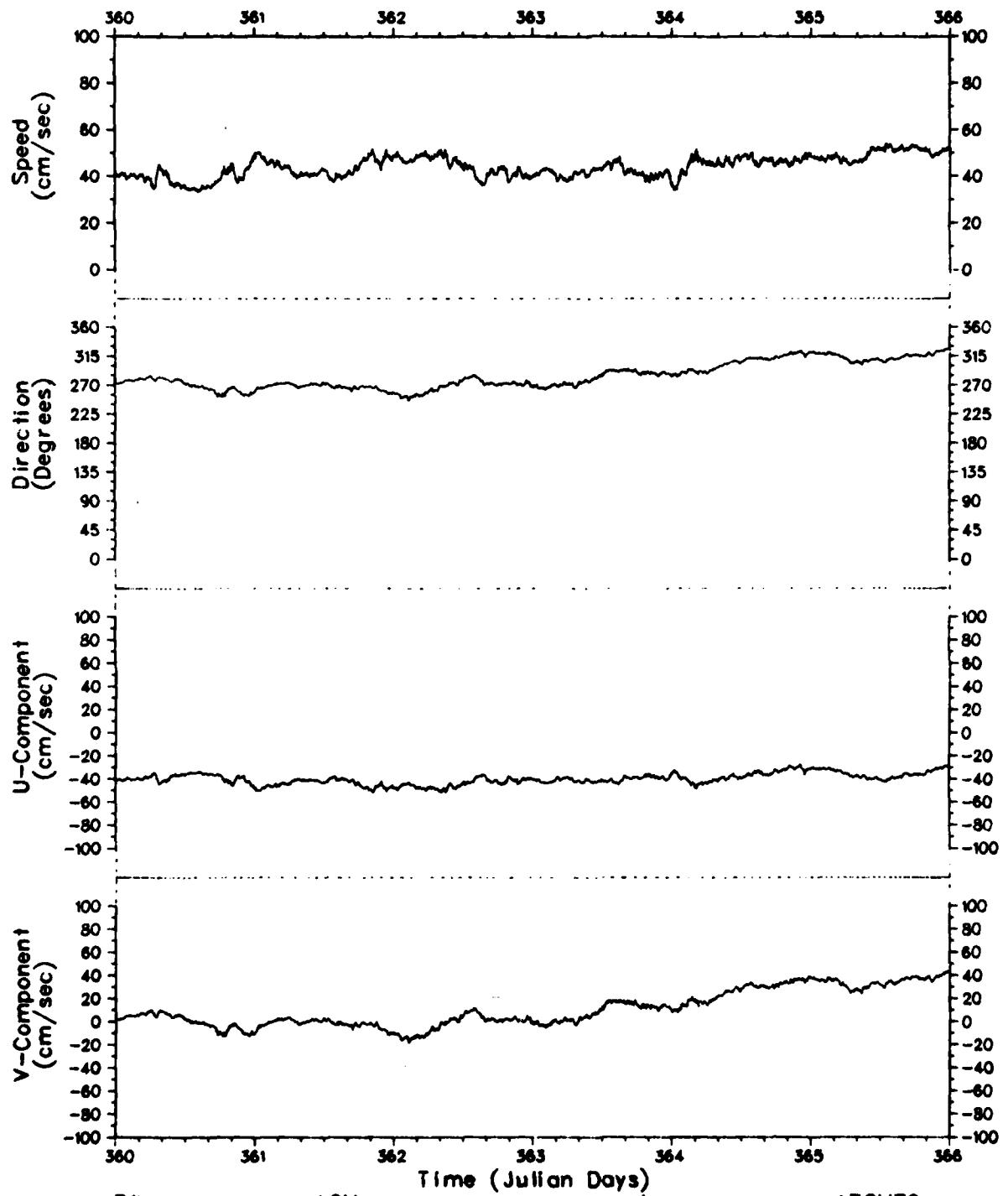


Figure 154.



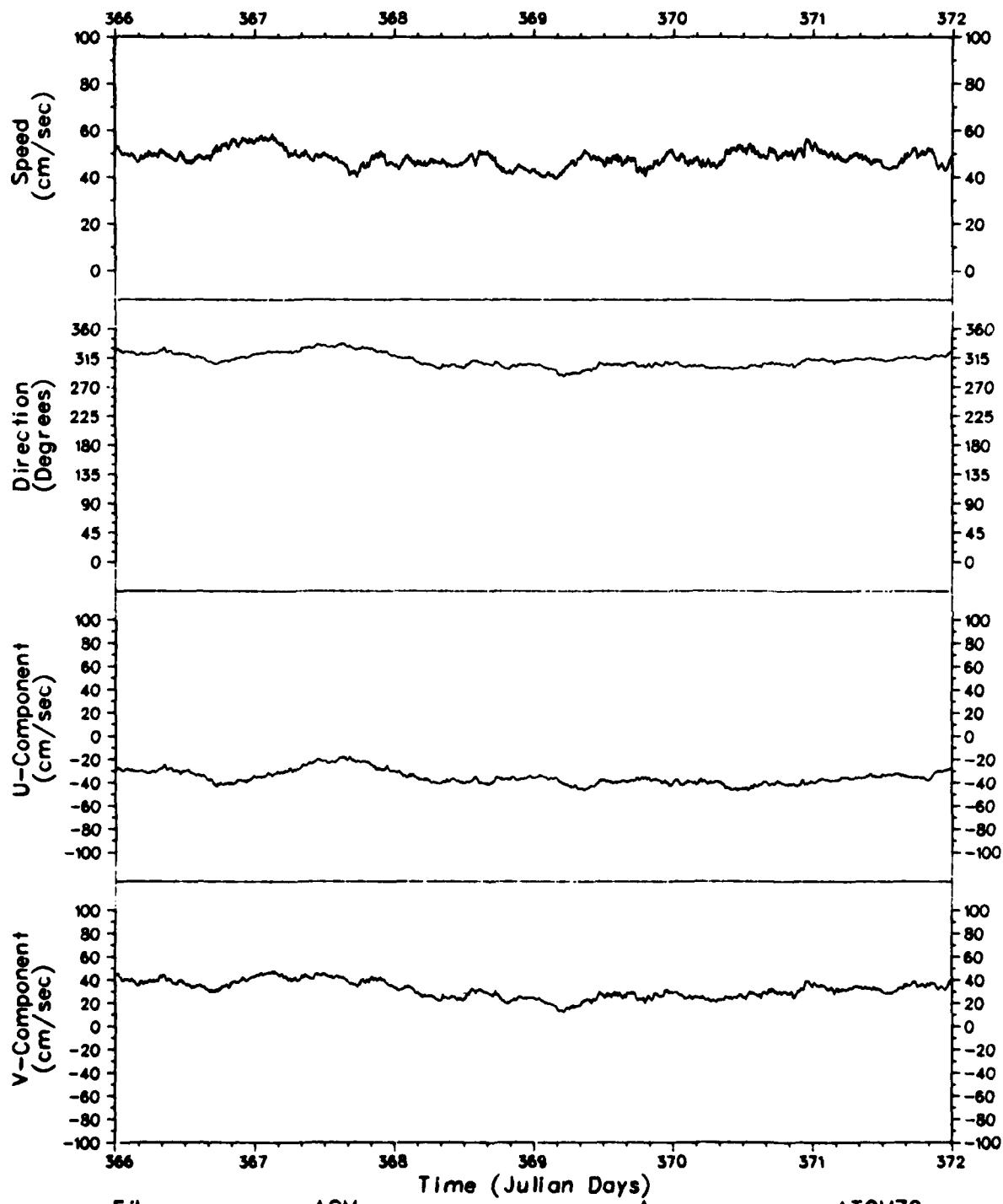
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000165
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 155.



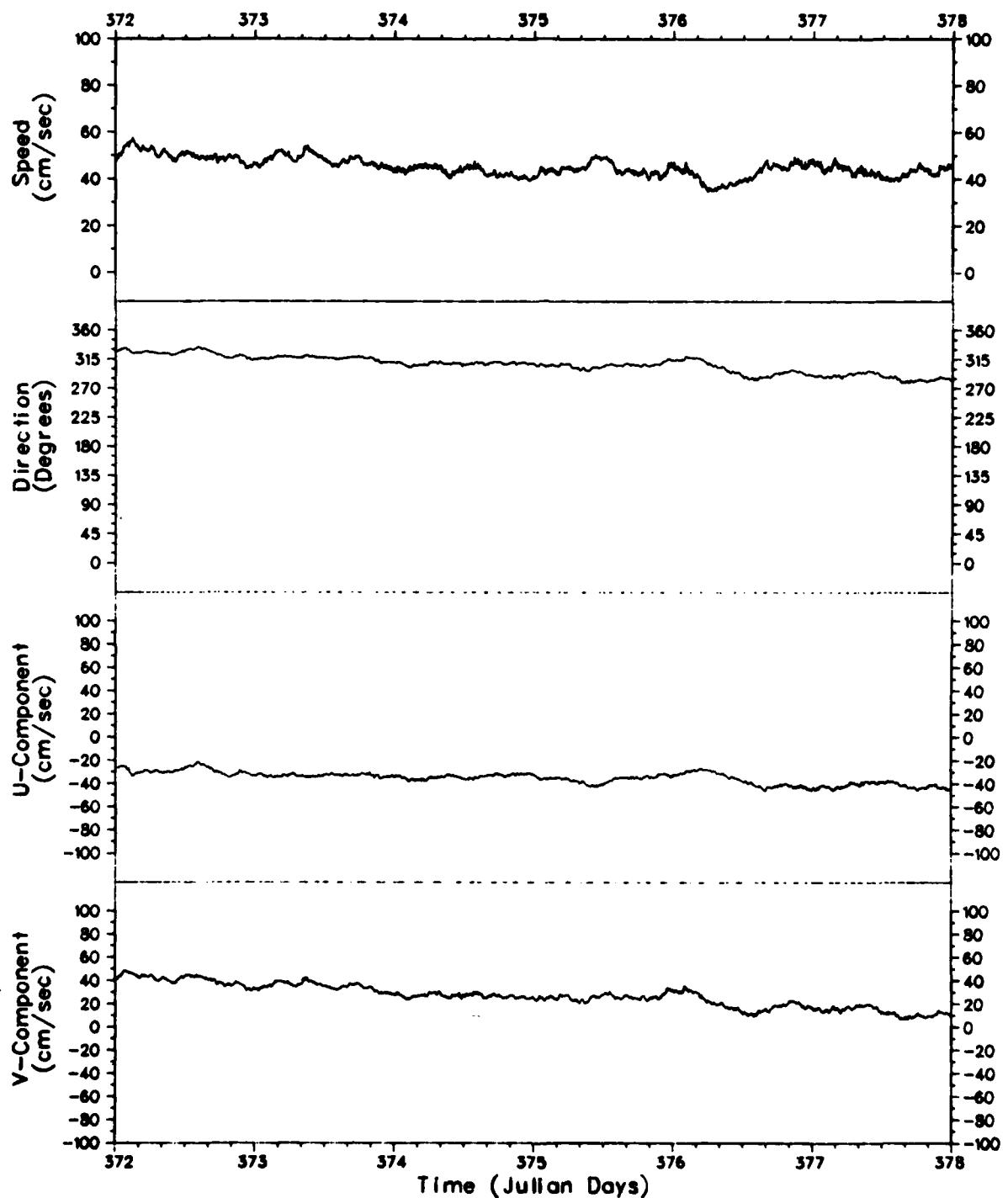
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000165
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 156.



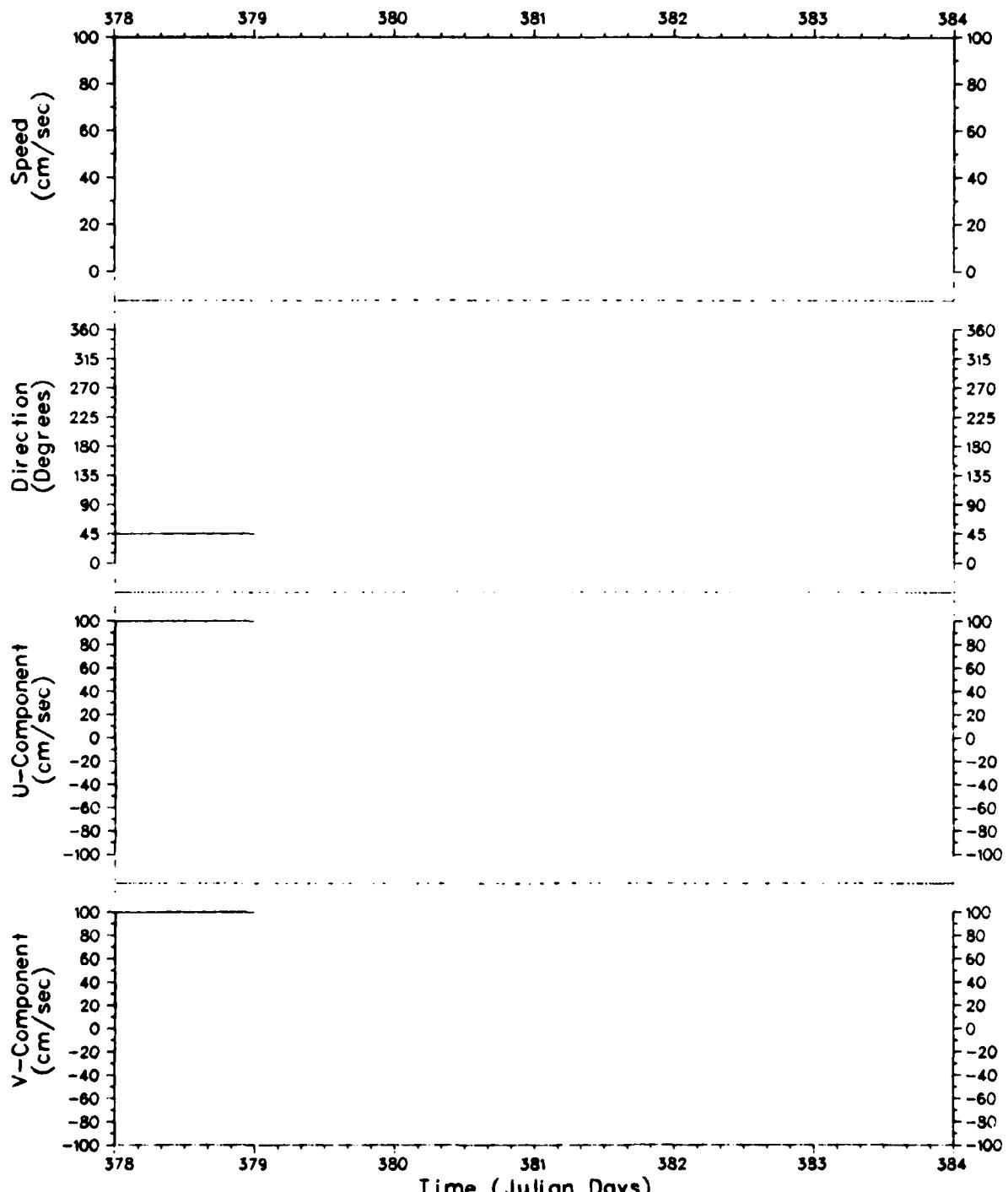
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000165
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 157.



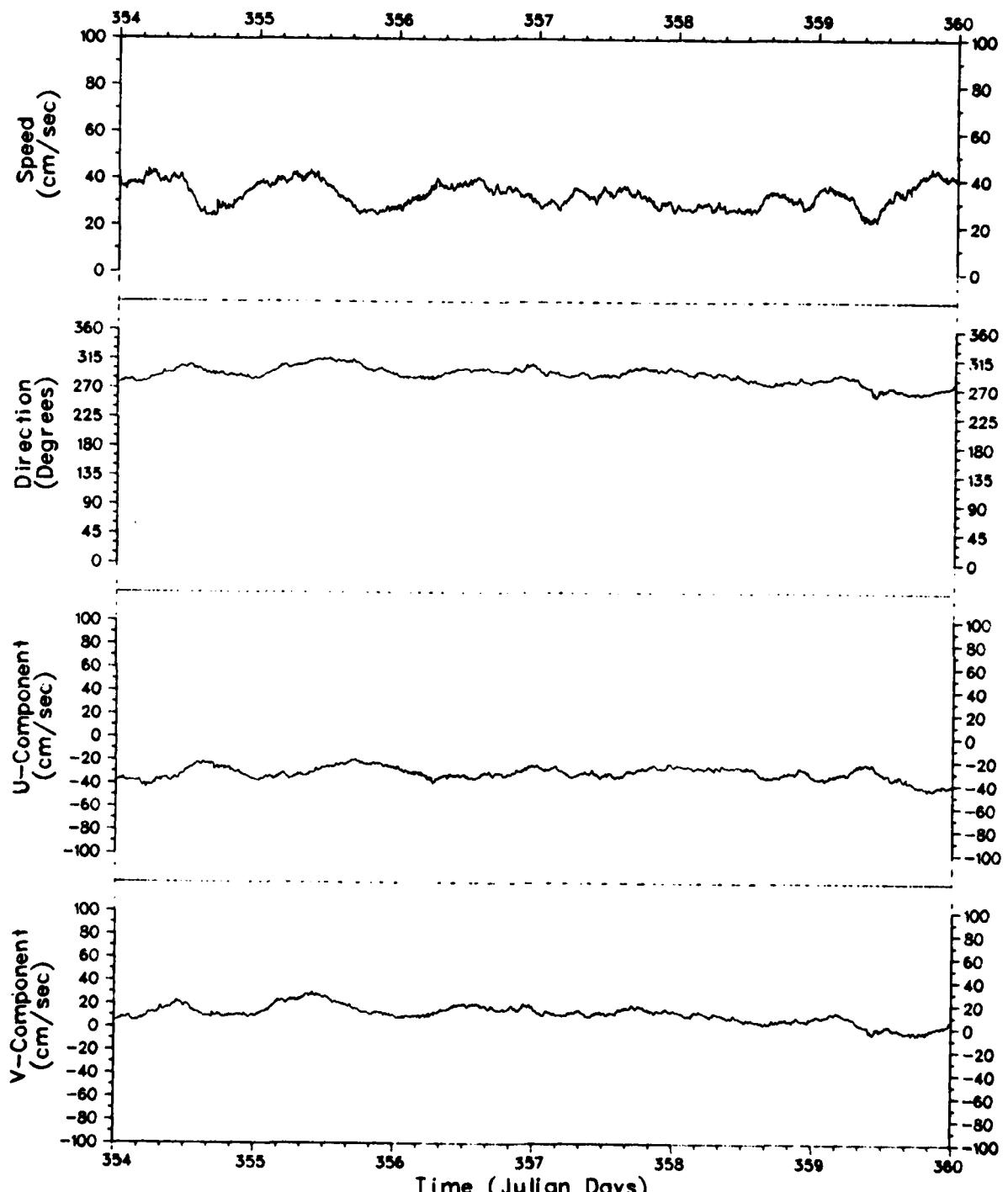
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000165
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 158.



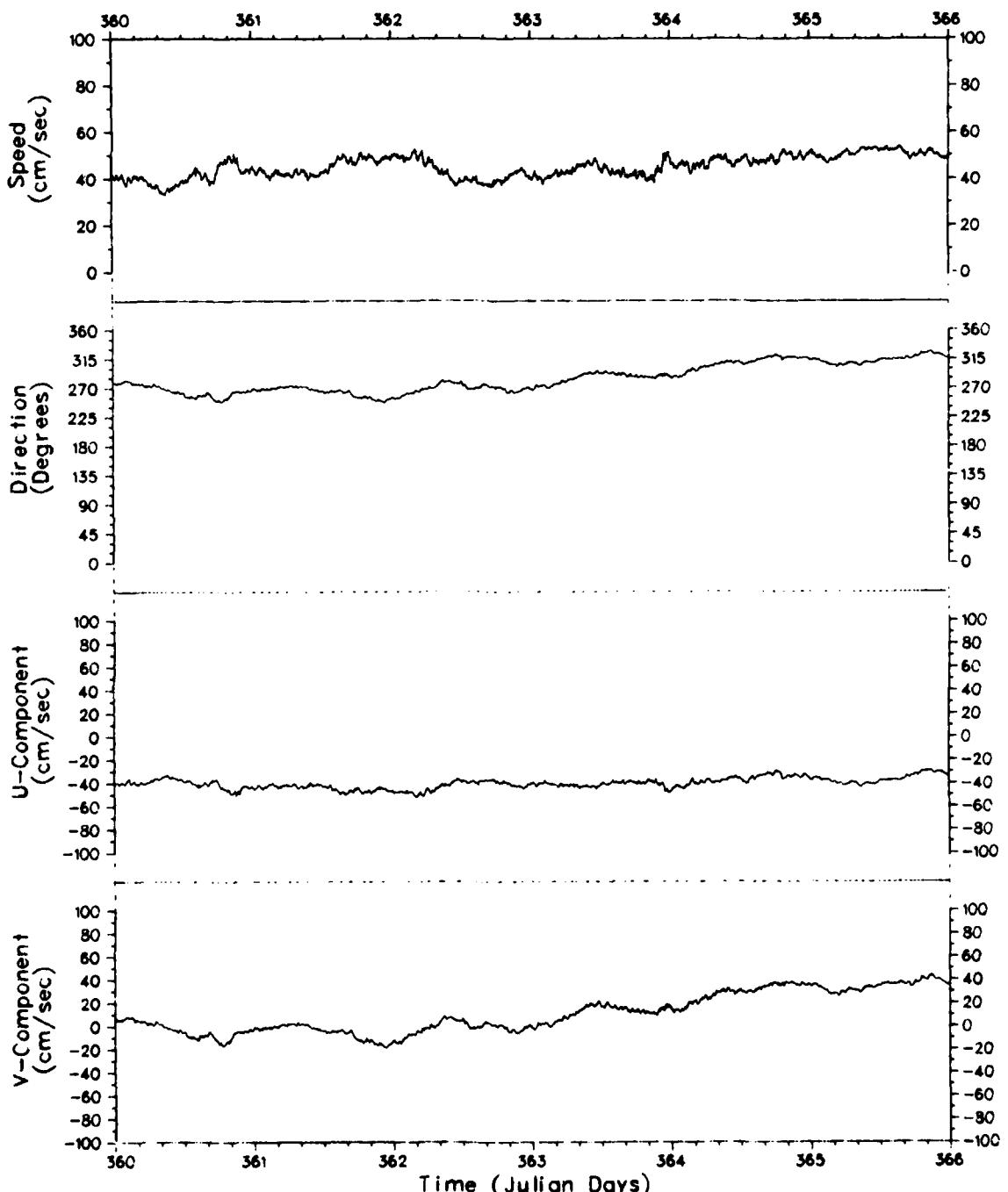
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000165
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1980

Figure 159.



File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000172
Latitude :	25.805555	Start :	00 12 1979
Longitude :	-89 744165	End :	14 01 1980

Figure 160.



File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000172
Latitude :	25.805555	Start :	00 12 1979
Longitude :	-89 744165	End :	14 01 280

Figure 161.

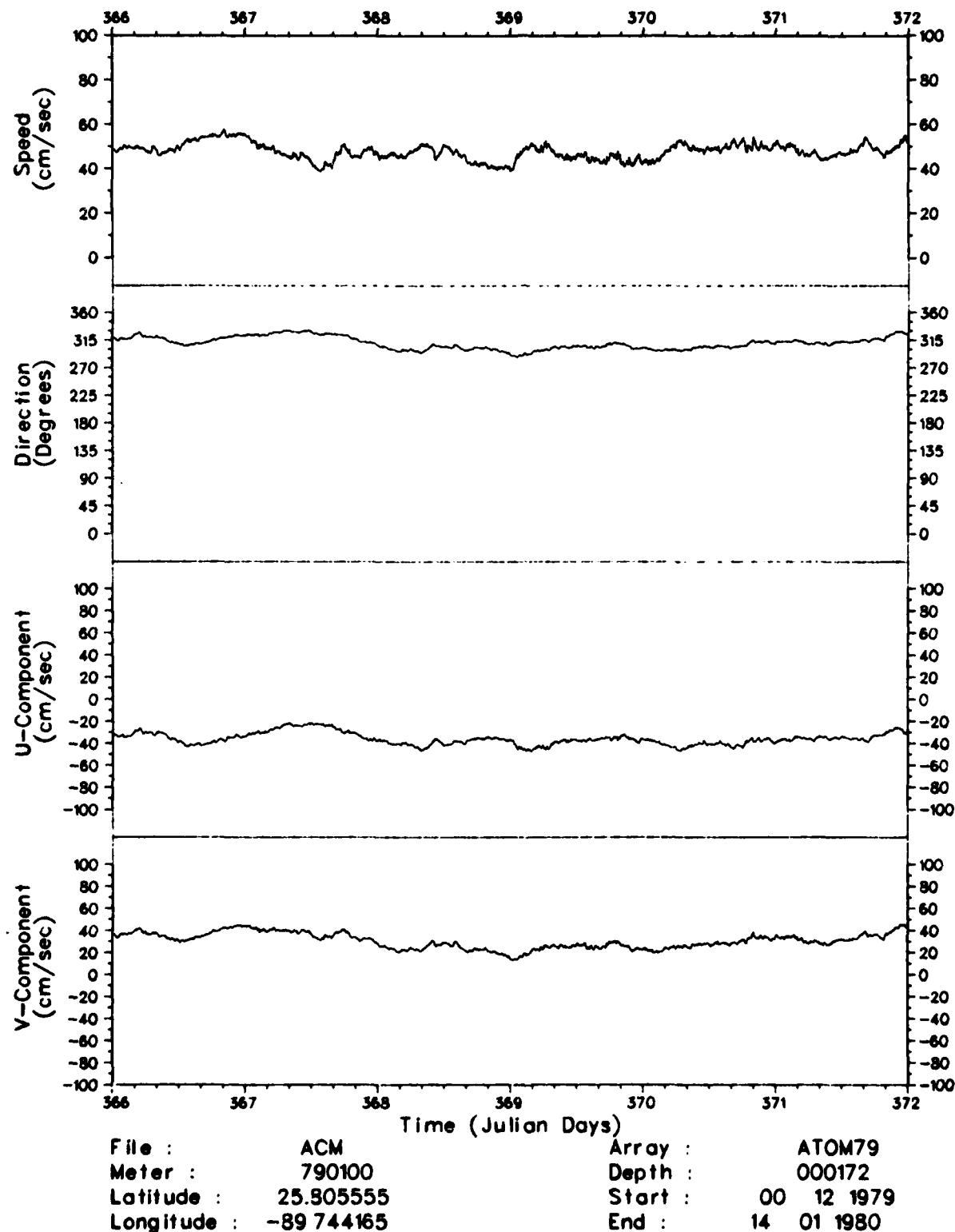
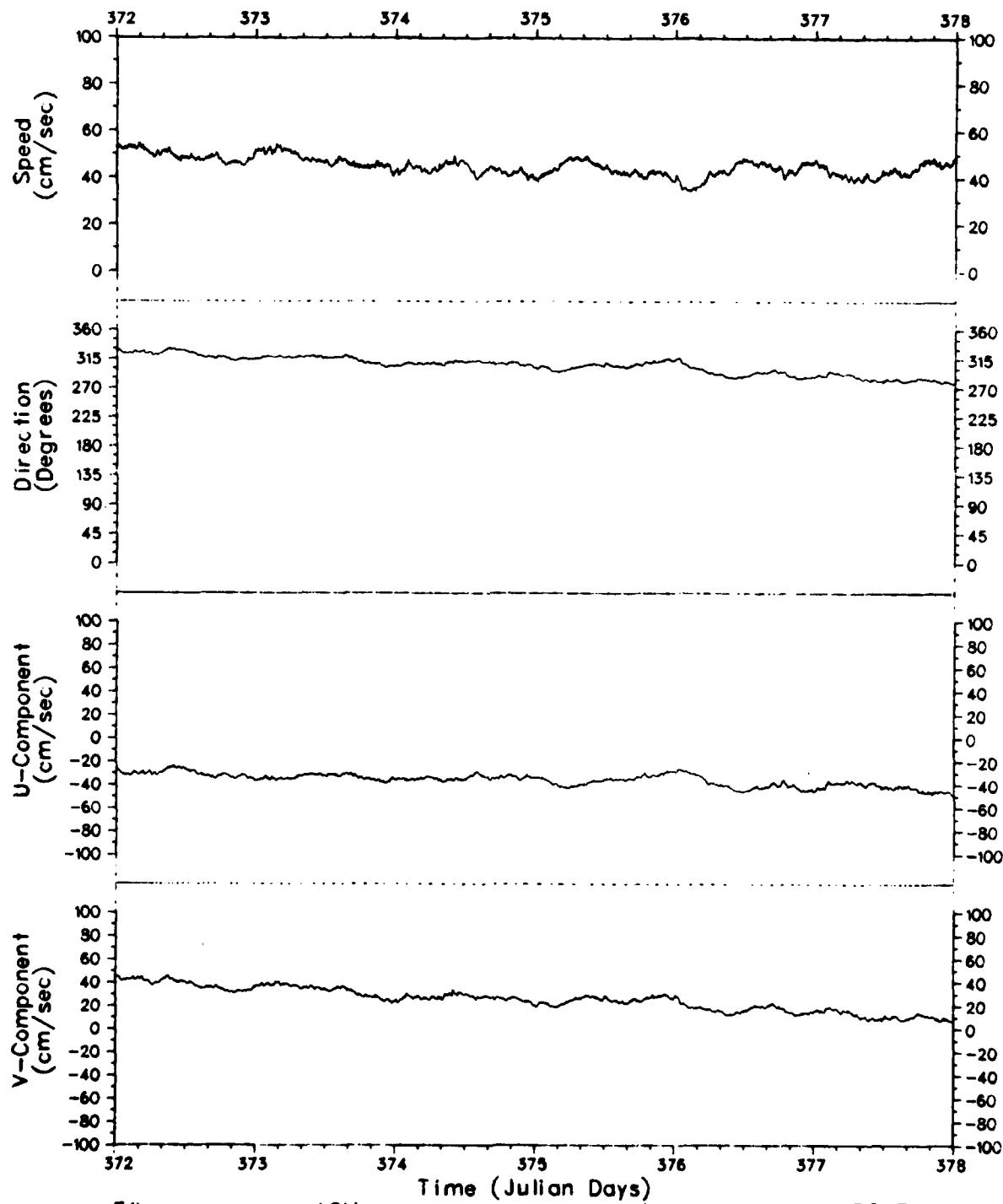
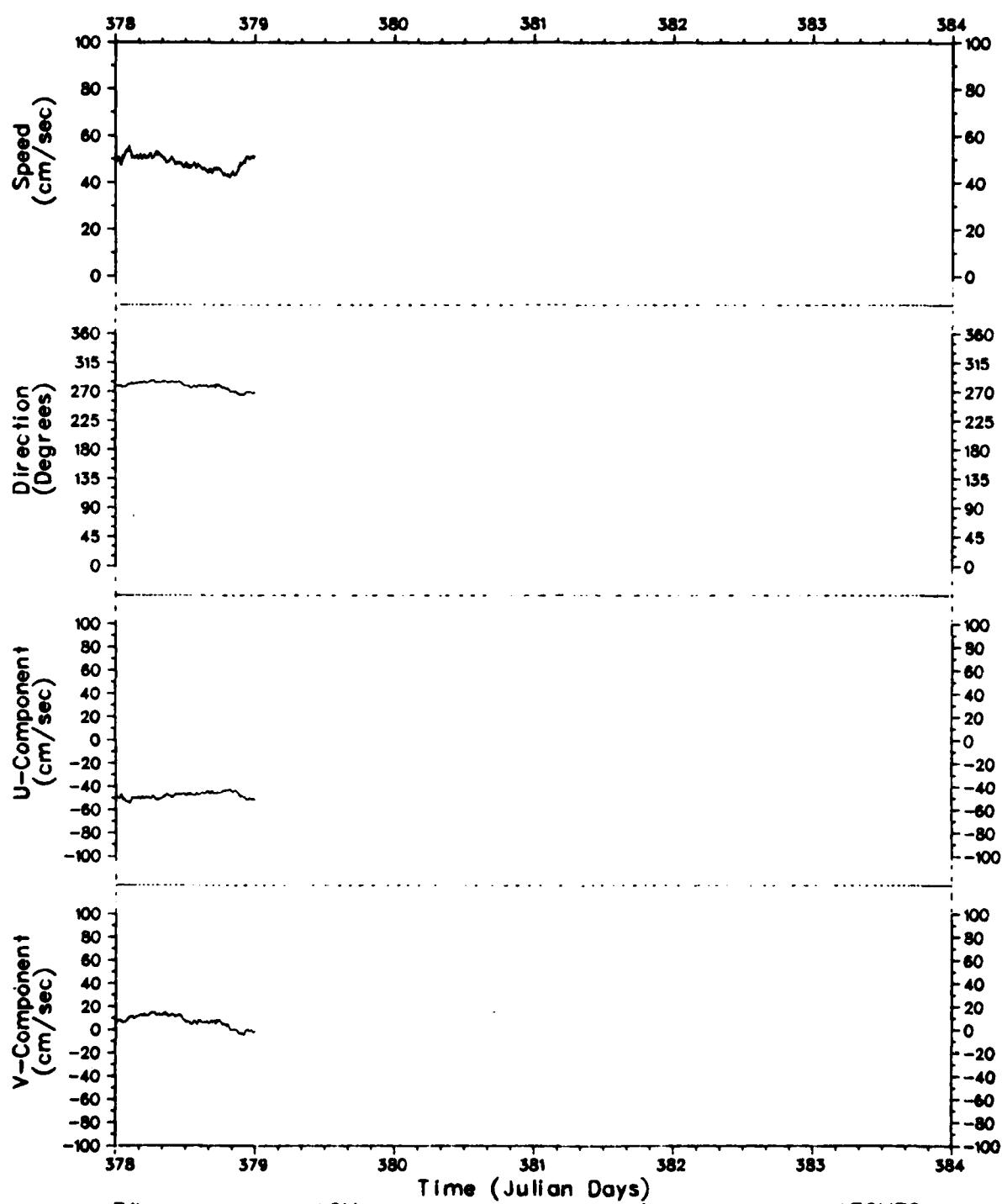


Figure 162.



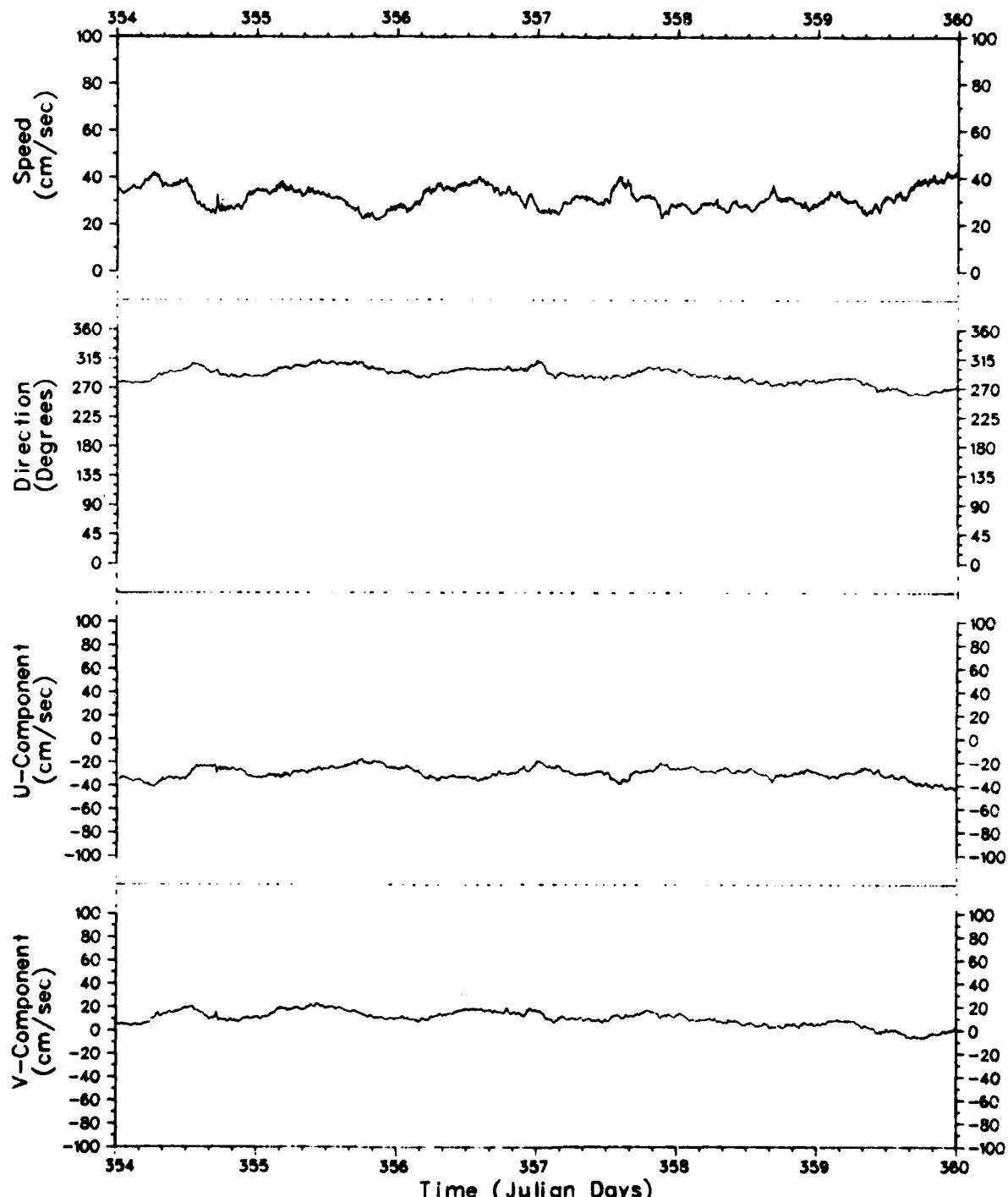
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000172
Latitude :	25.805555	Start :	00 12 1979
Longitude :	-89 744165	End :	14 01 1980

Figure 163.



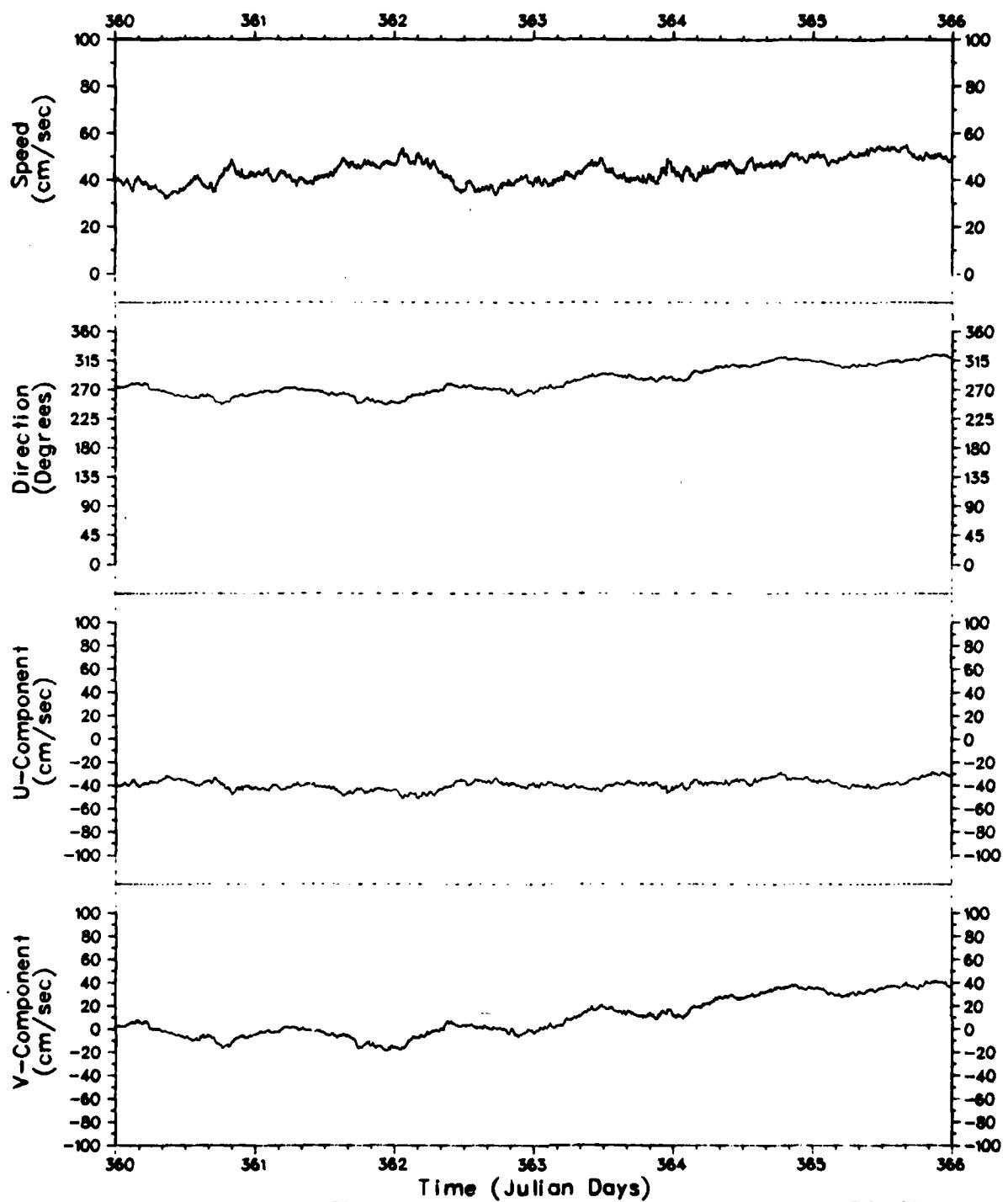
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000172
Latitude :	25.805555	Start :	00 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 164.



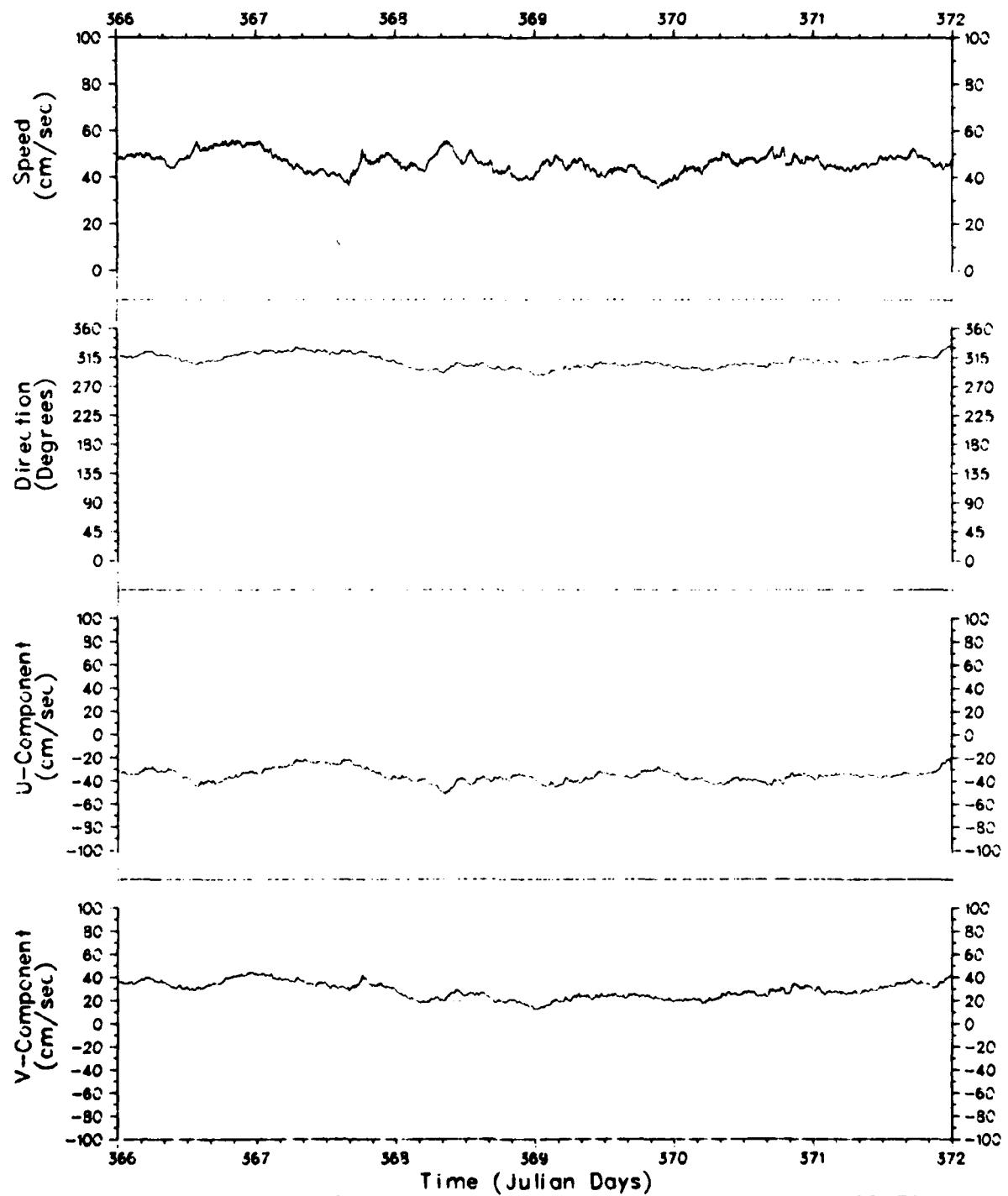
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000179
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1980

Figure 165.



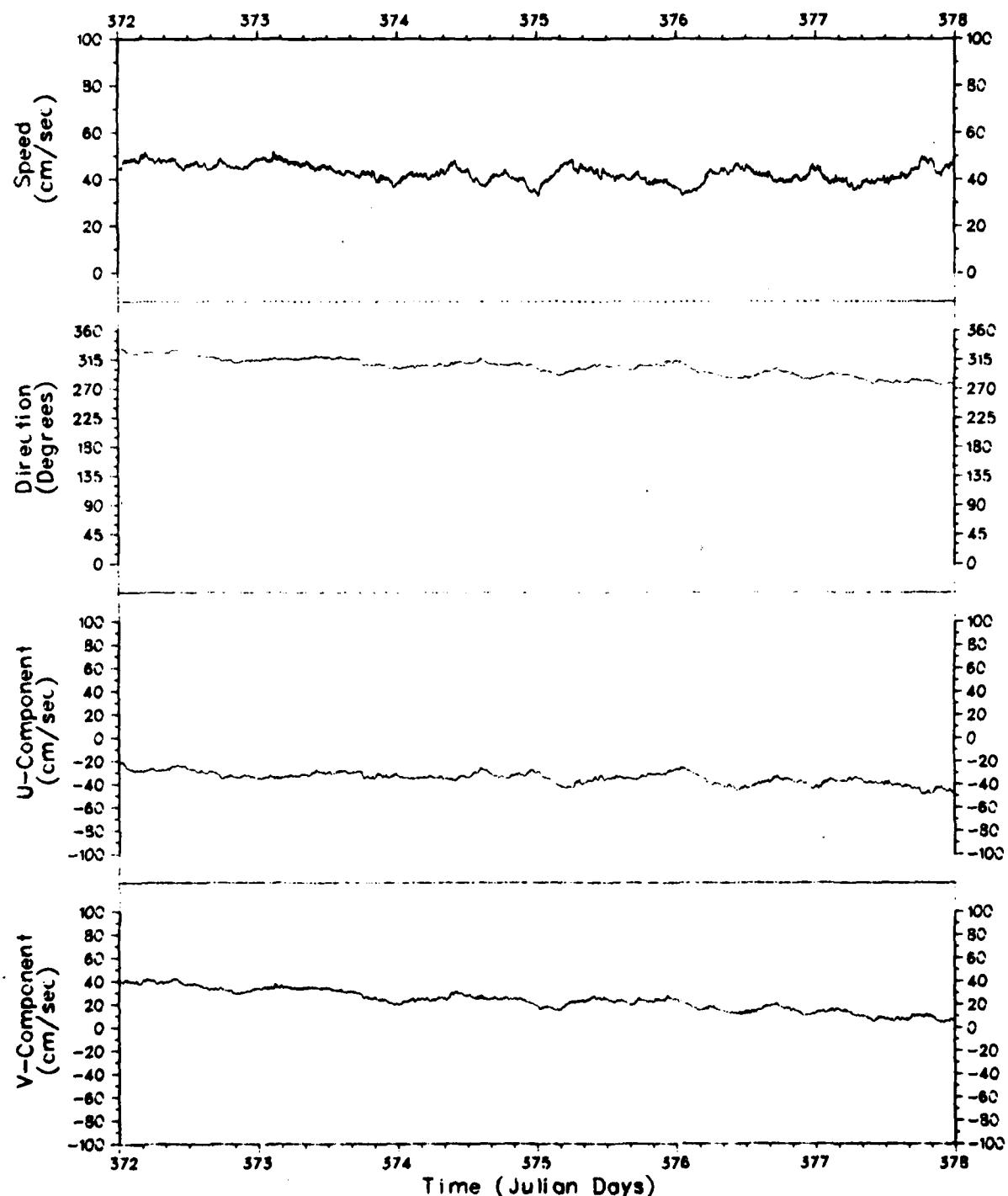
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000179
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1980

Figure 166.



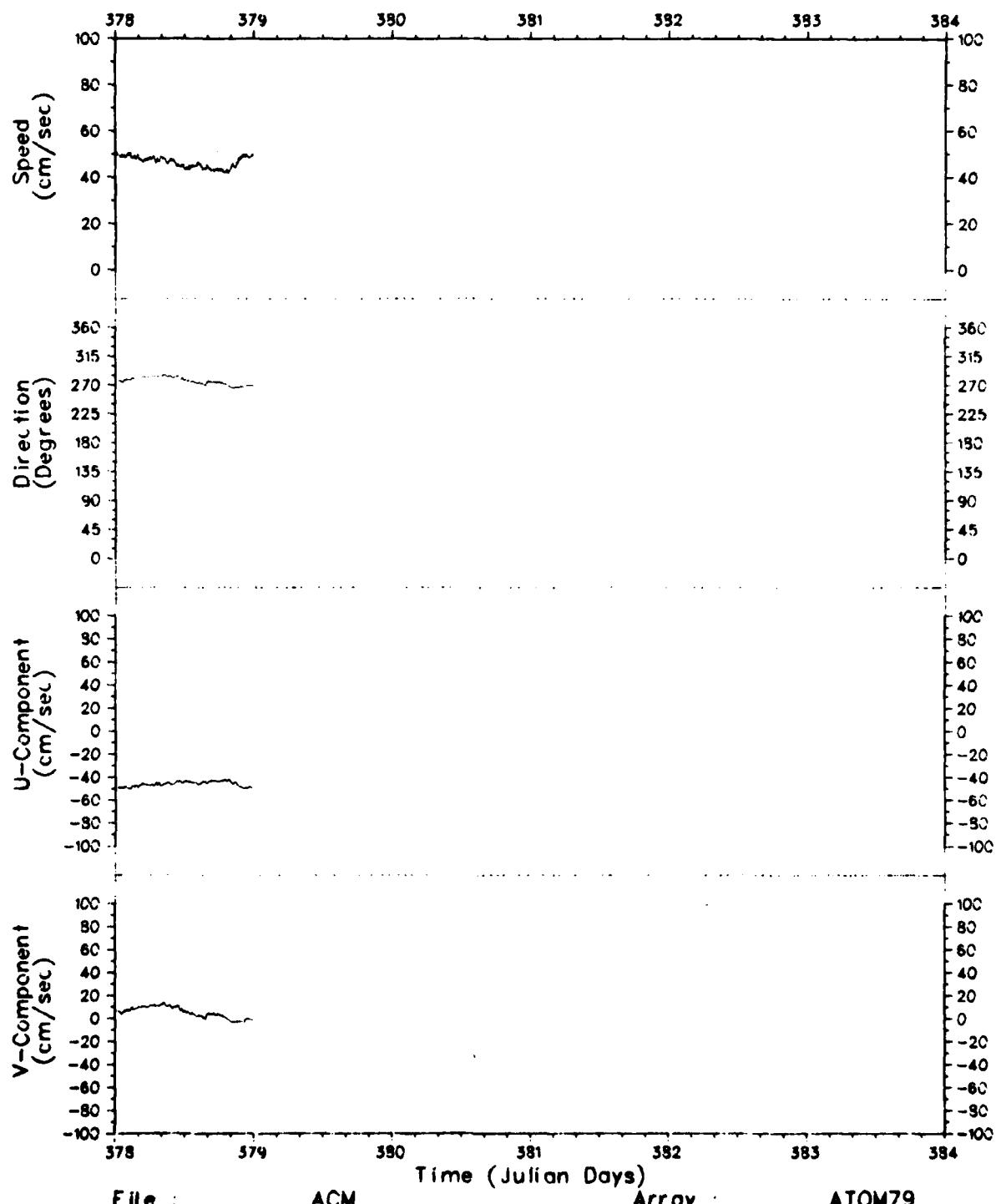
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000179
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1980

Figure 167.



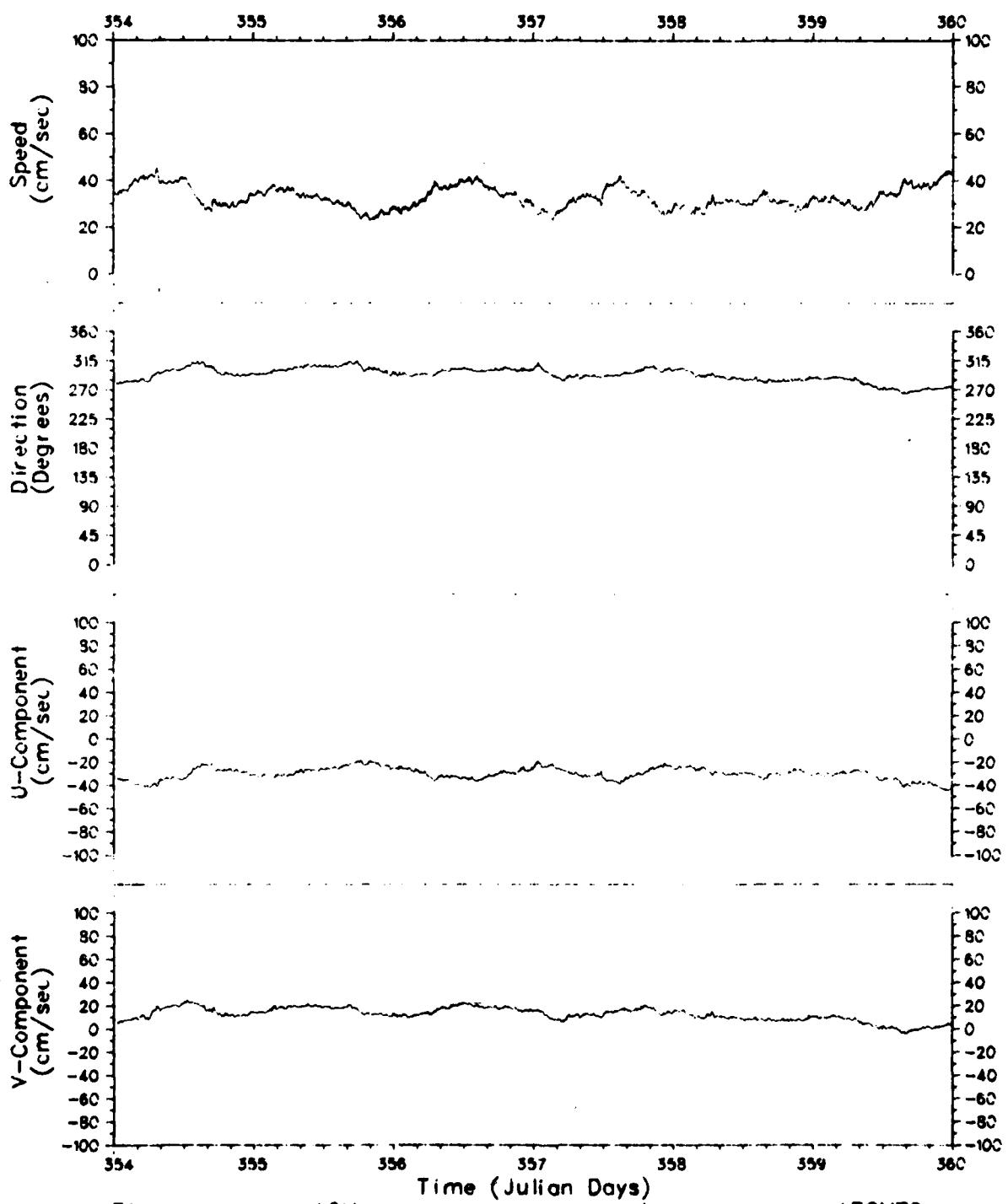
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000179
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 168.



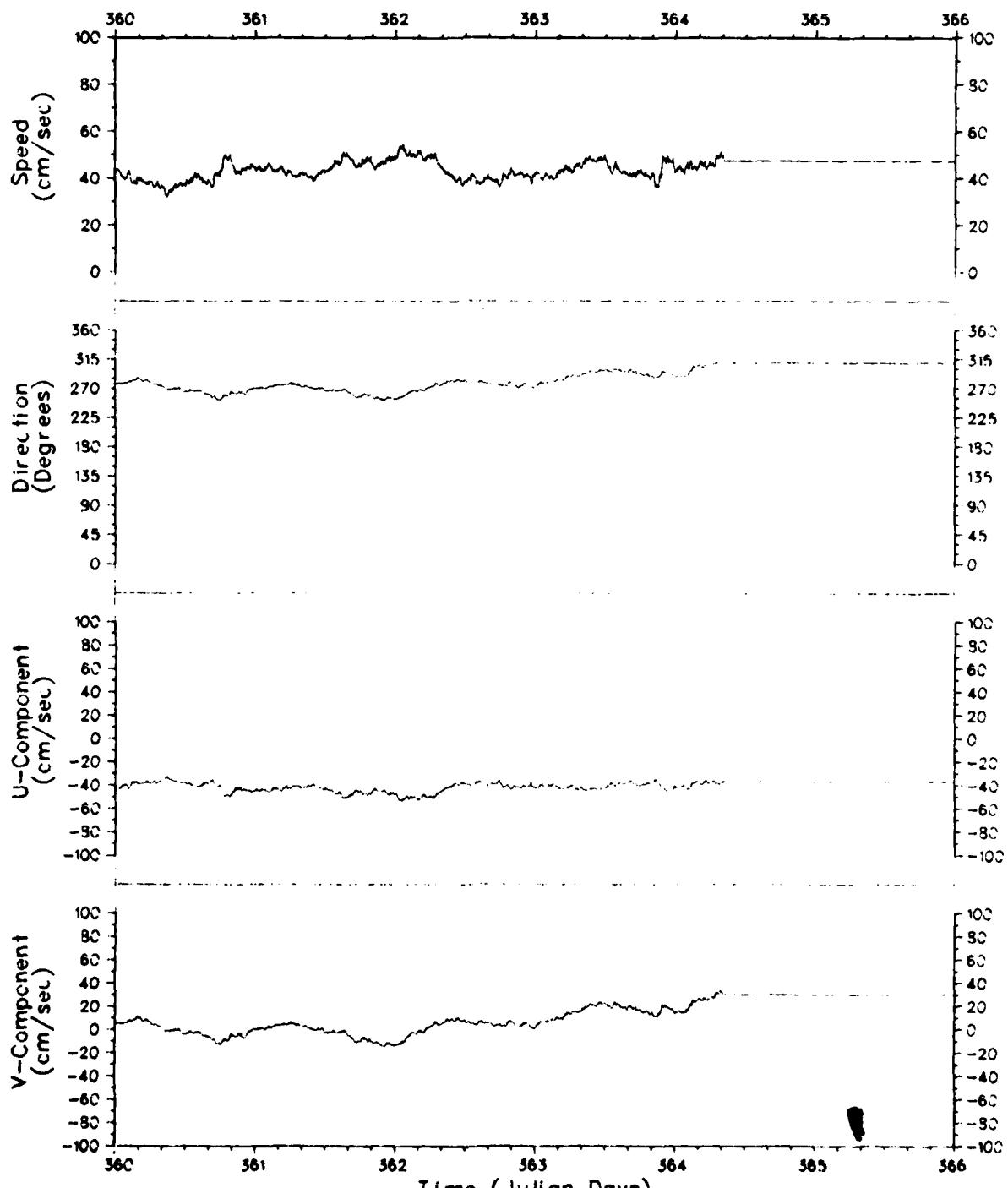
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000179
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1980

Figure 169.



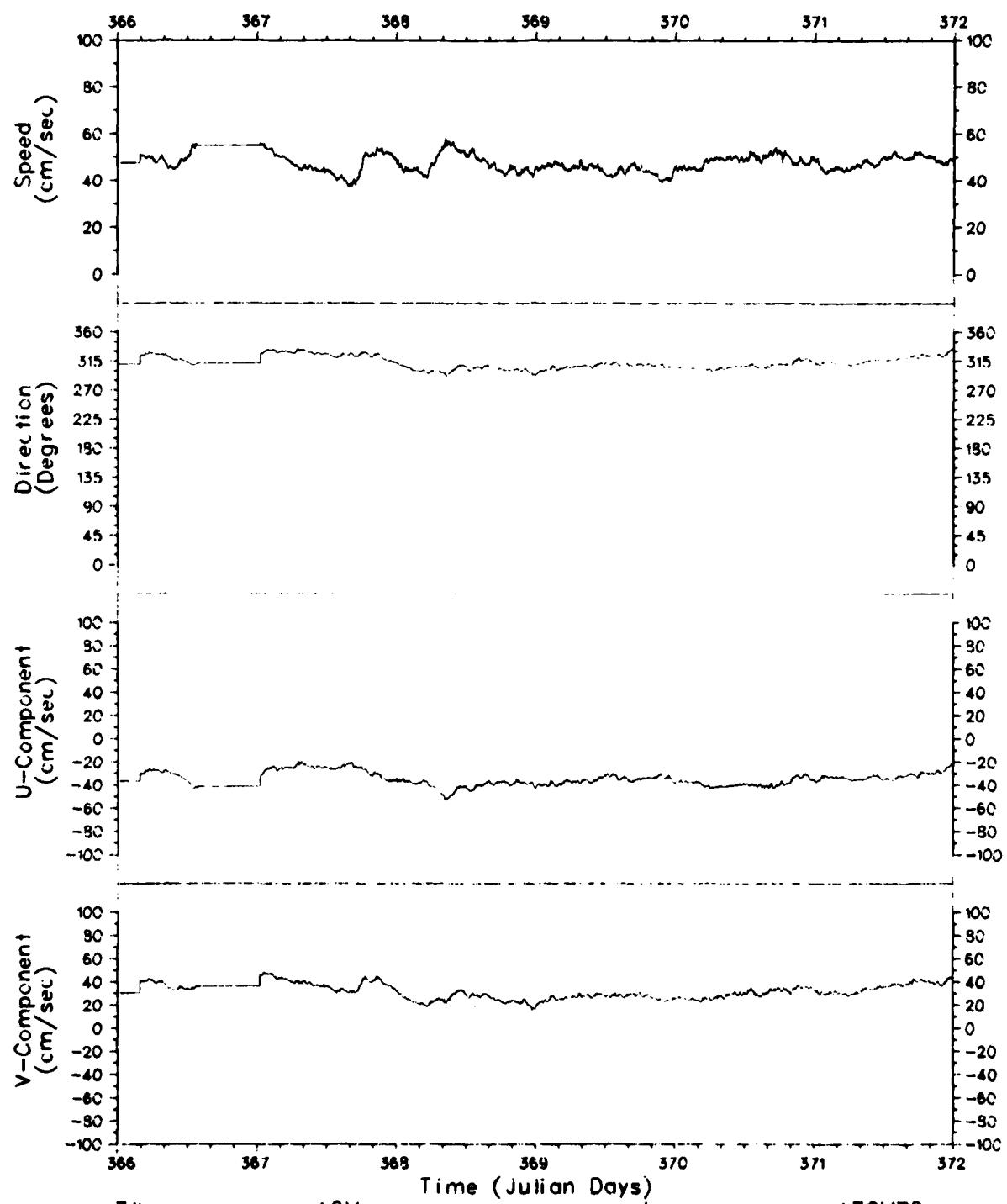
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000186
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1980

Figure 170.



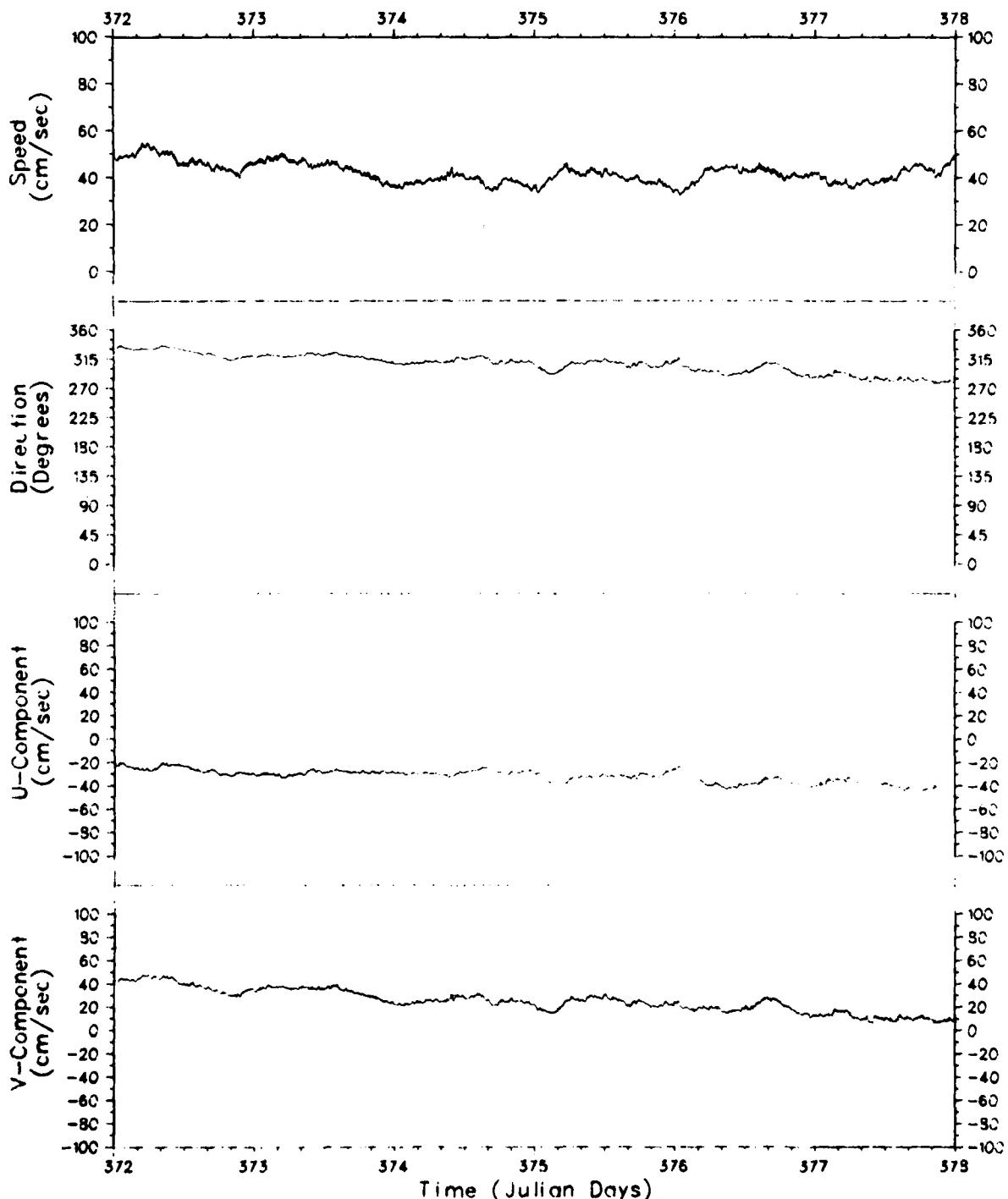
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000186
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1980

Figure 171.



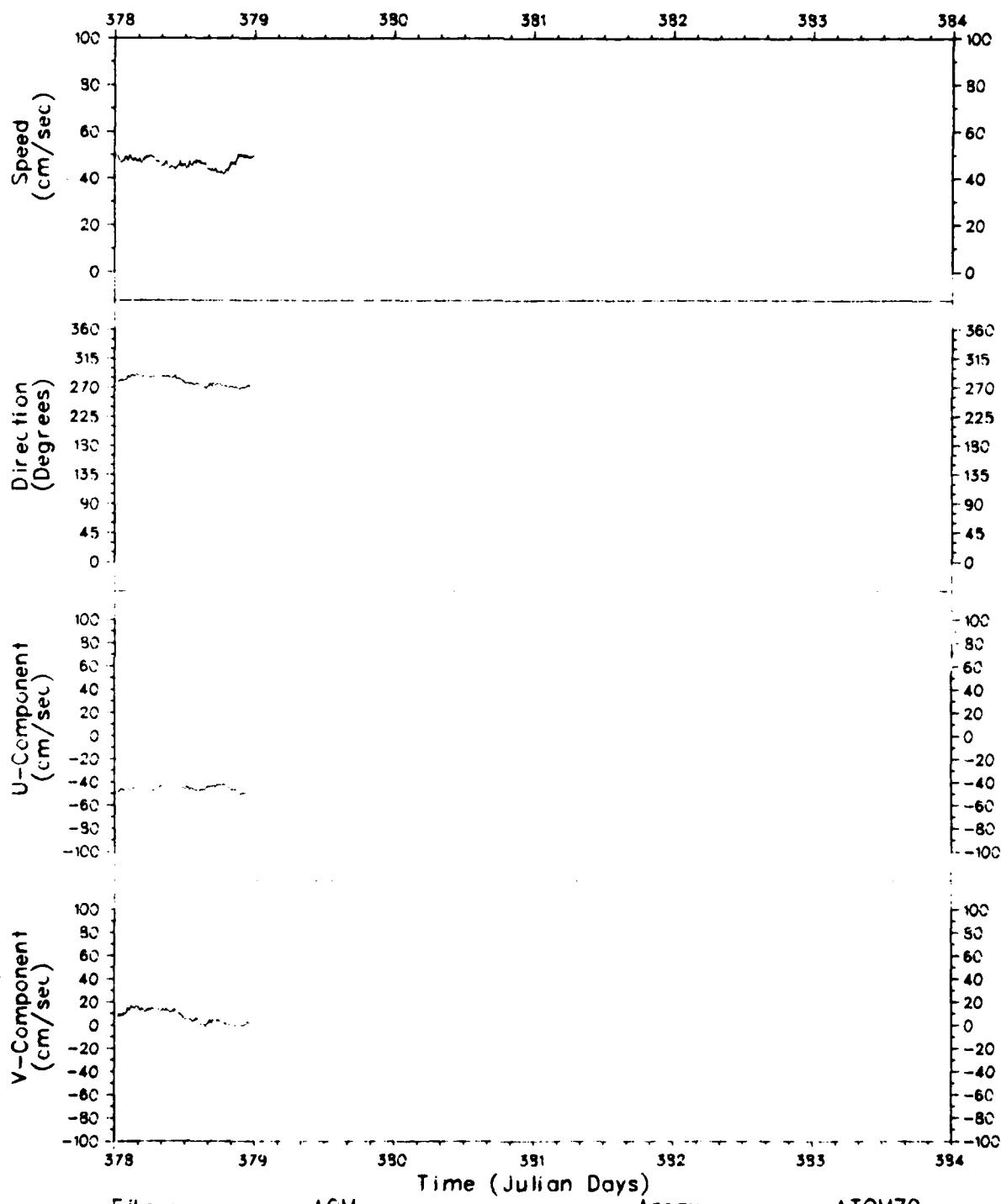
File : ACM Array : ATOM79
 Meter : 790100 Depth : 000186
 Latitude : 25.805555 Start : 19 12 1979
 Longitude : -89 744165 End : 14 01 1980

Figure 172.



File	ACM	Array	ATOM79
Meter	790100	Depth	000186
Latitude	25 805555	Start	19 12 1979
Longitude	-89 744165	End	14 01 1980

Figure 173.



File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000186
Latitude :	25 805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1980

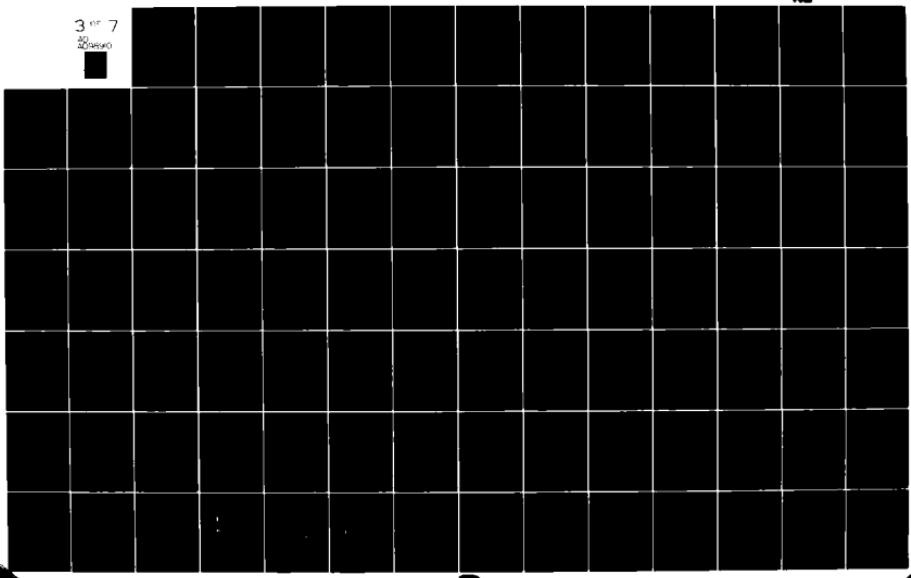
Figure 174.

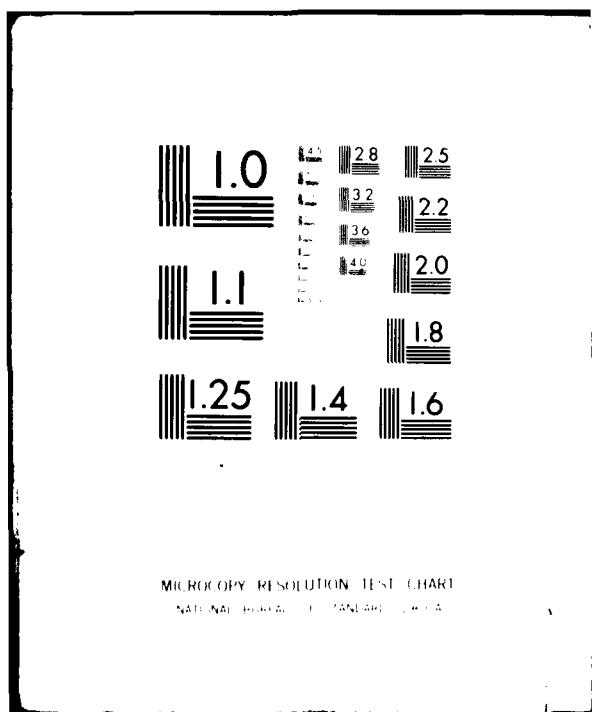
AD-A098 910 NAVAL OCEAN RESEARCH AND DEVELOPMENT ACTIVITY NSTL S--ETC F/8 8/3
A COMPREHENSIVE GRAPHICAL REPRESENTATION OF DATA OBTAINED IN TH--ETC
OCT 80 K D SAUNDERS, A W GREEN, M T BERGIN

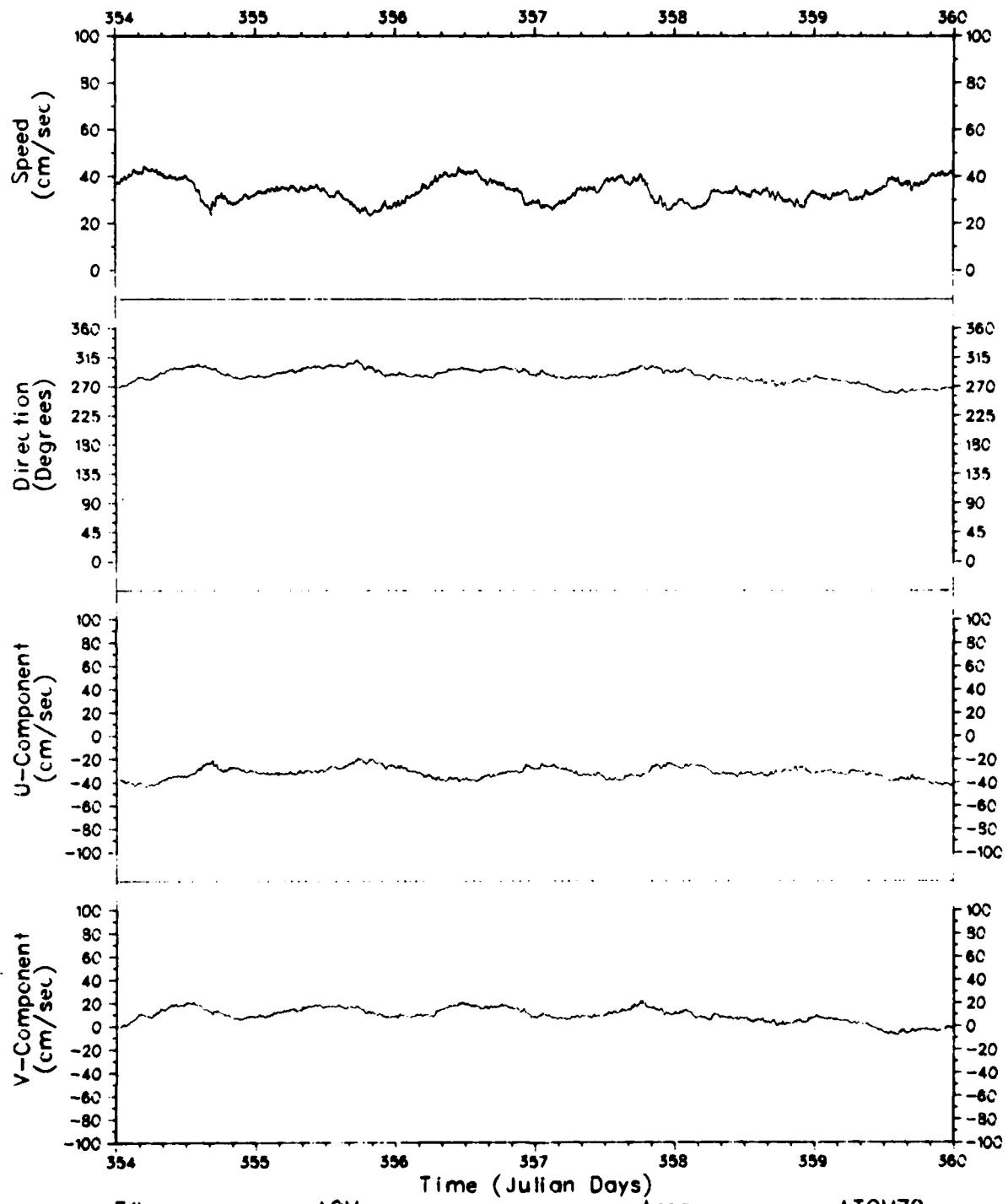
UNCLASSIFIED NORDA-TN-85

NL

3 of 7
40
40000

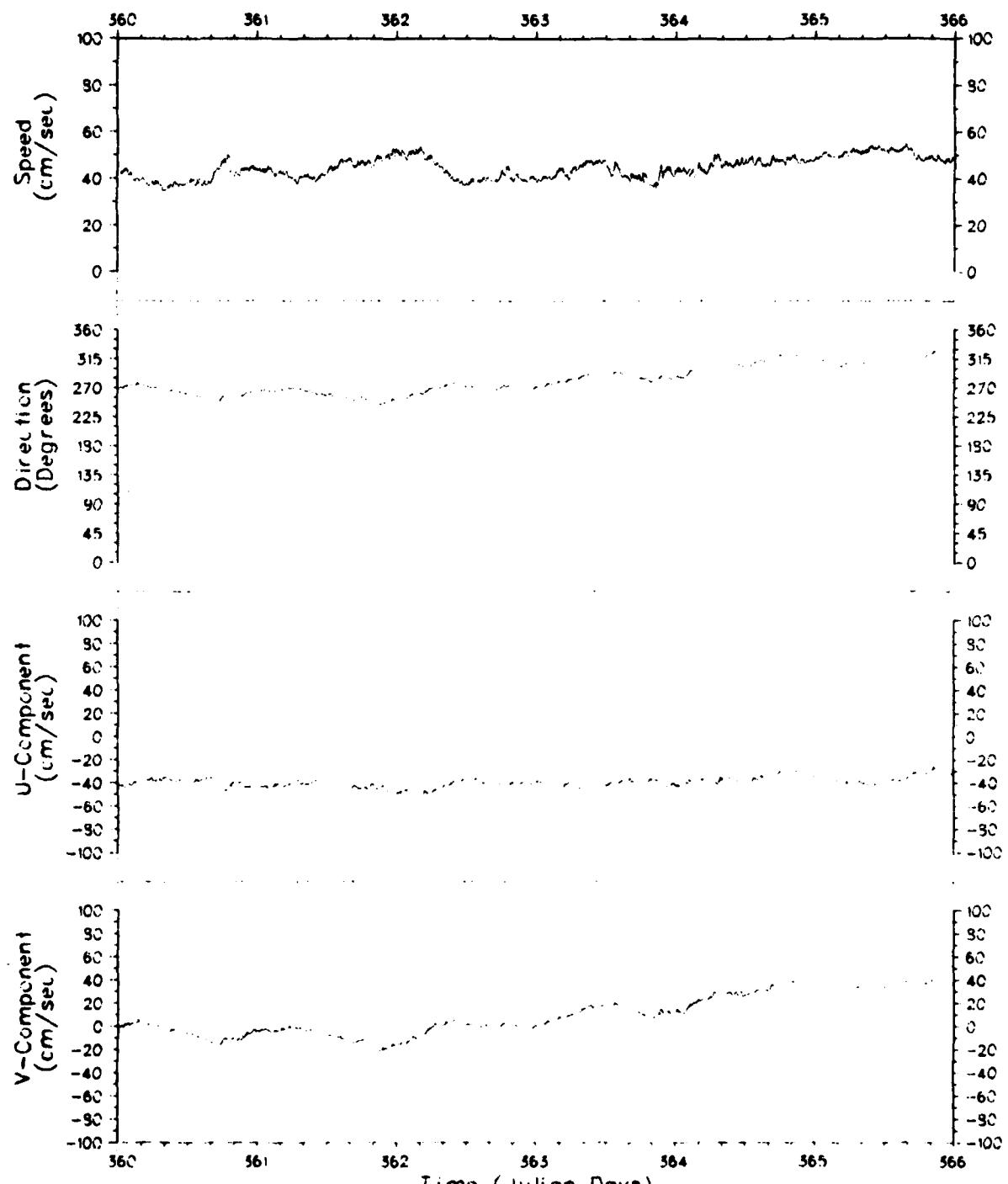






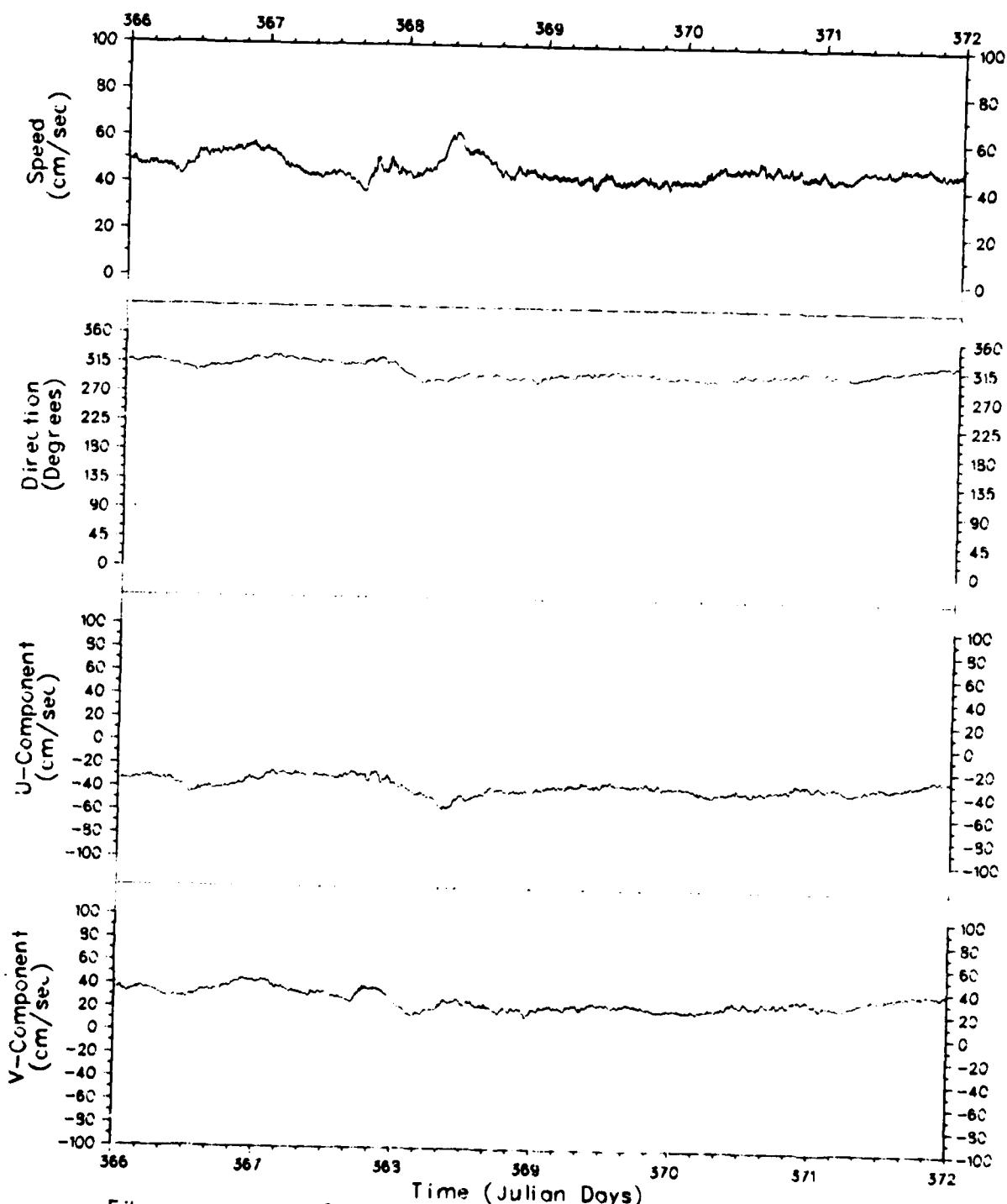
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000193
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1980

Figure 175.



File	ACM	Array	ATOM79
Meter	790100	Depth	000193
Latitude	25 805555	Start	19 12 1979
Longitude	-89 744165	End	14 01 1980

Figure 176.



File : ACM
 Meter : 790100
 Latitude : 25 805555
 Longitude : -89 744165
 Array : ATOM79
 Depth : 000193
 Start : 19 12 1979
 End : 14 01 1980

Figure 177.

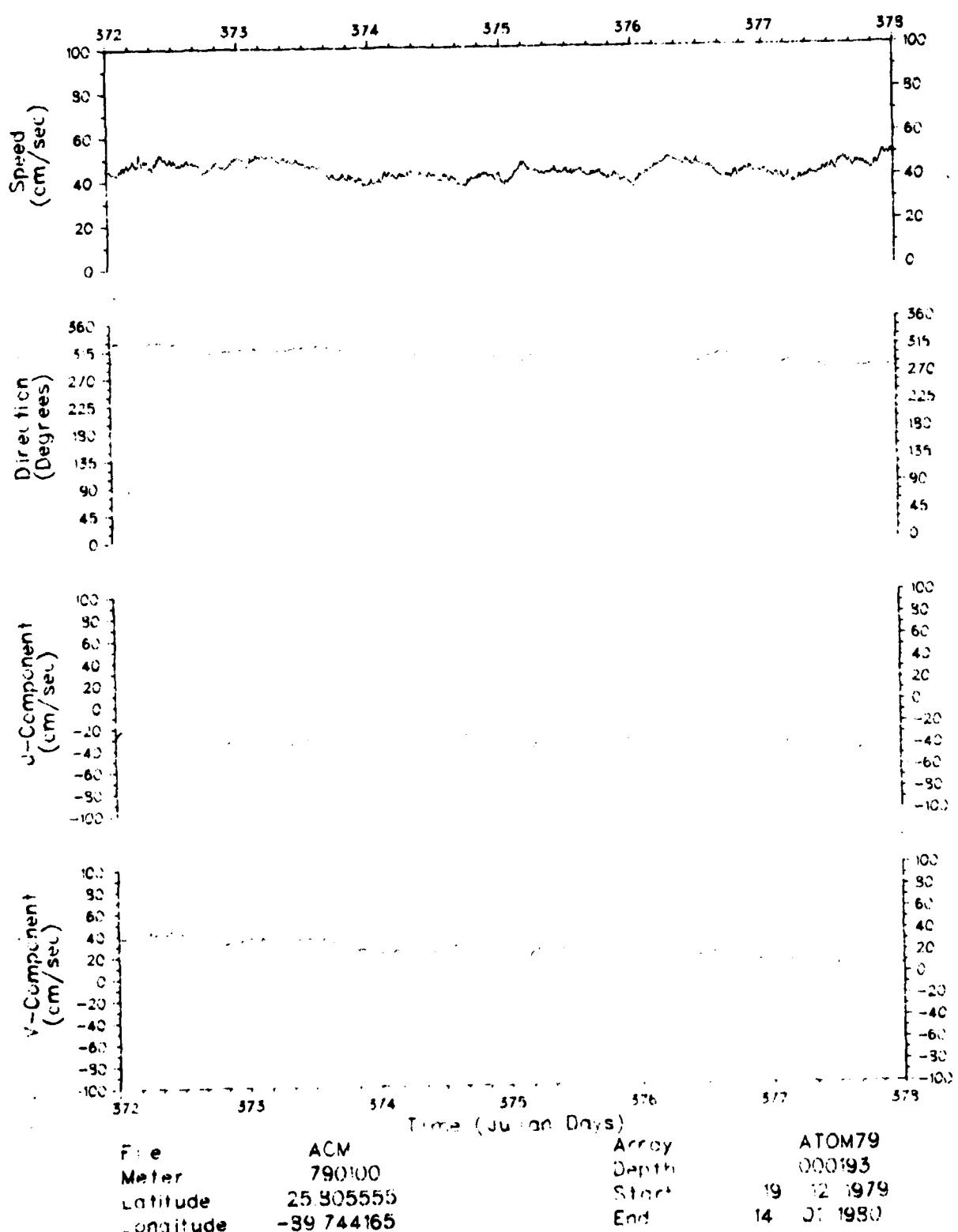
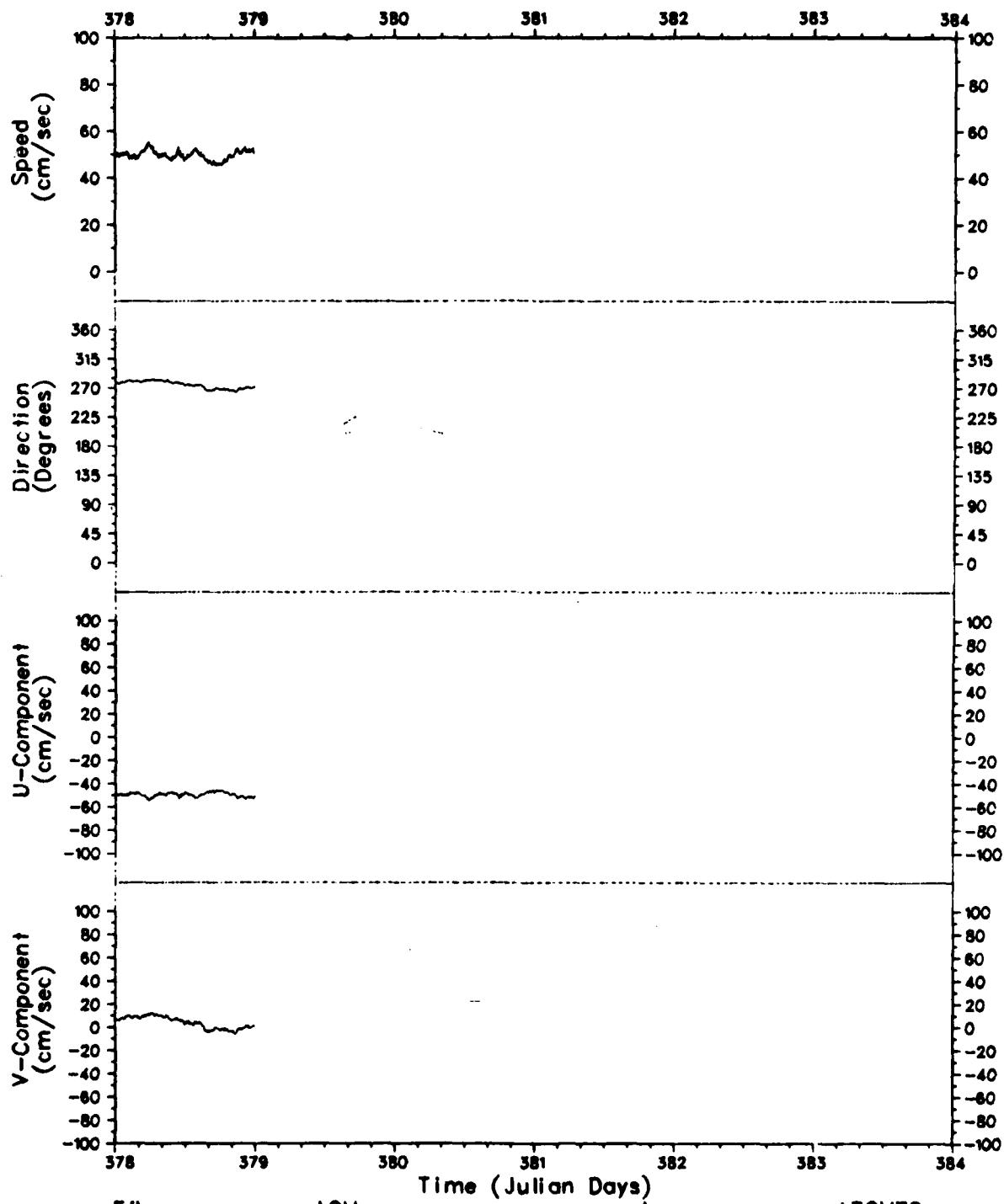
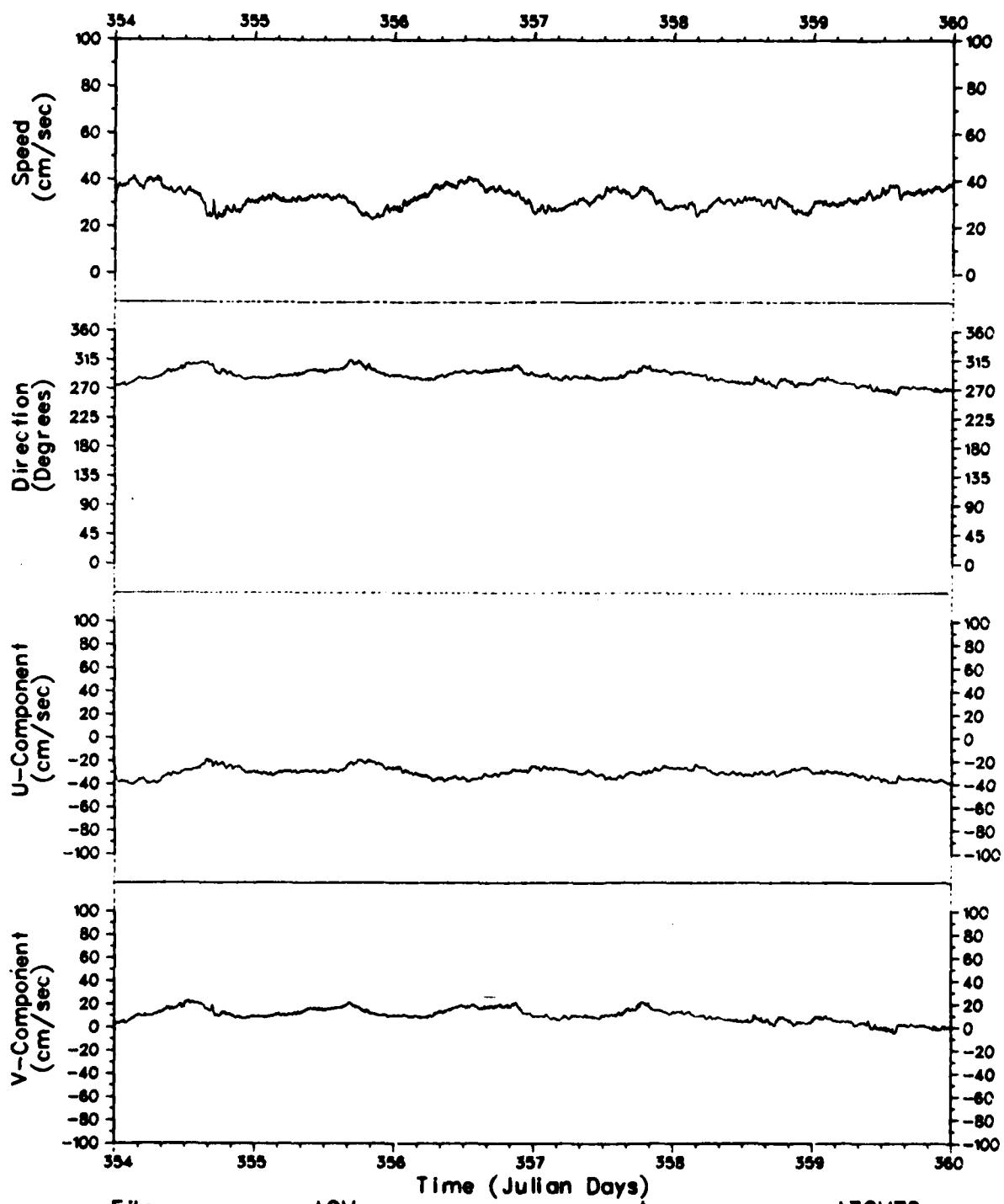


Figure 178.



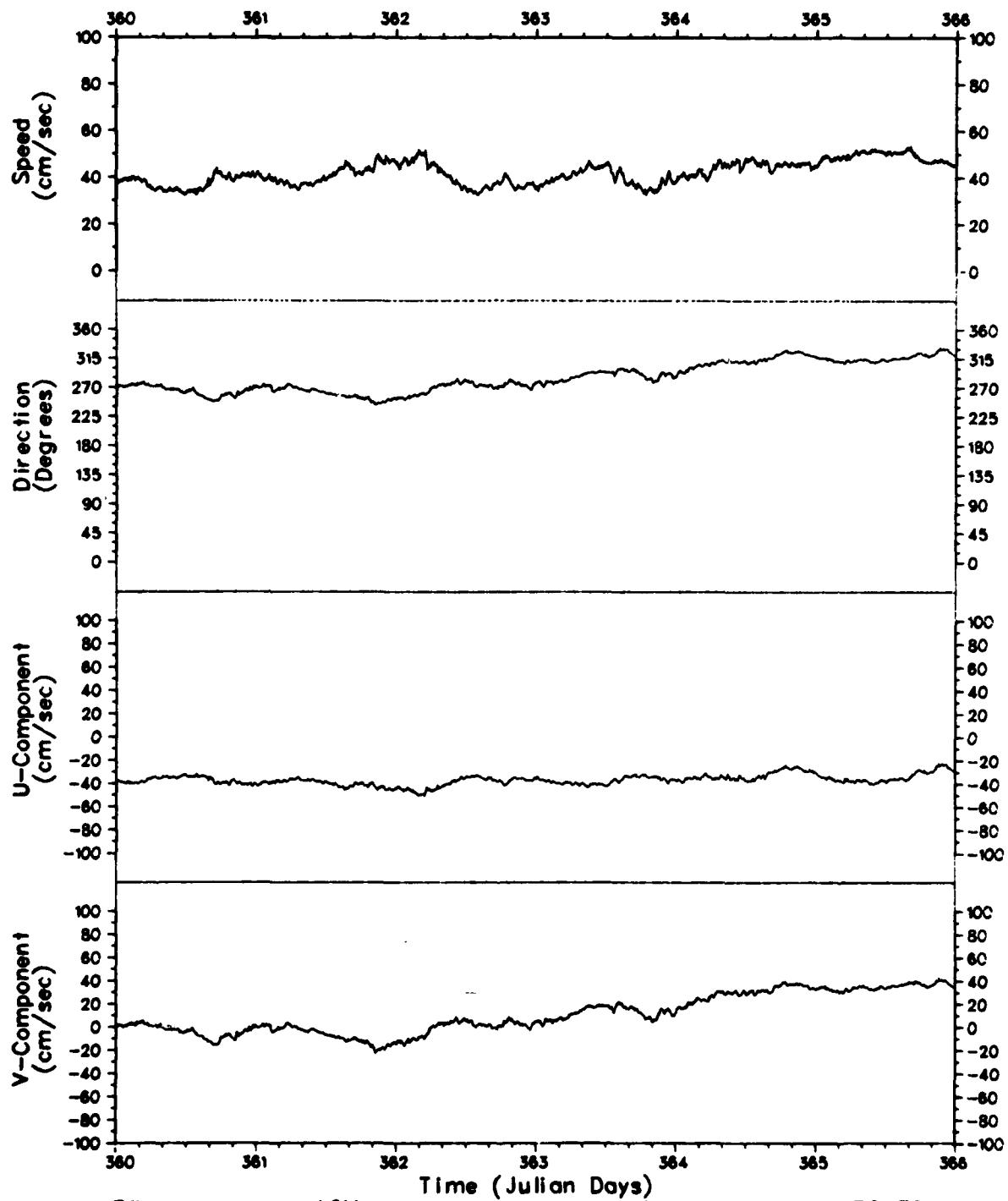
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000193
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 179.



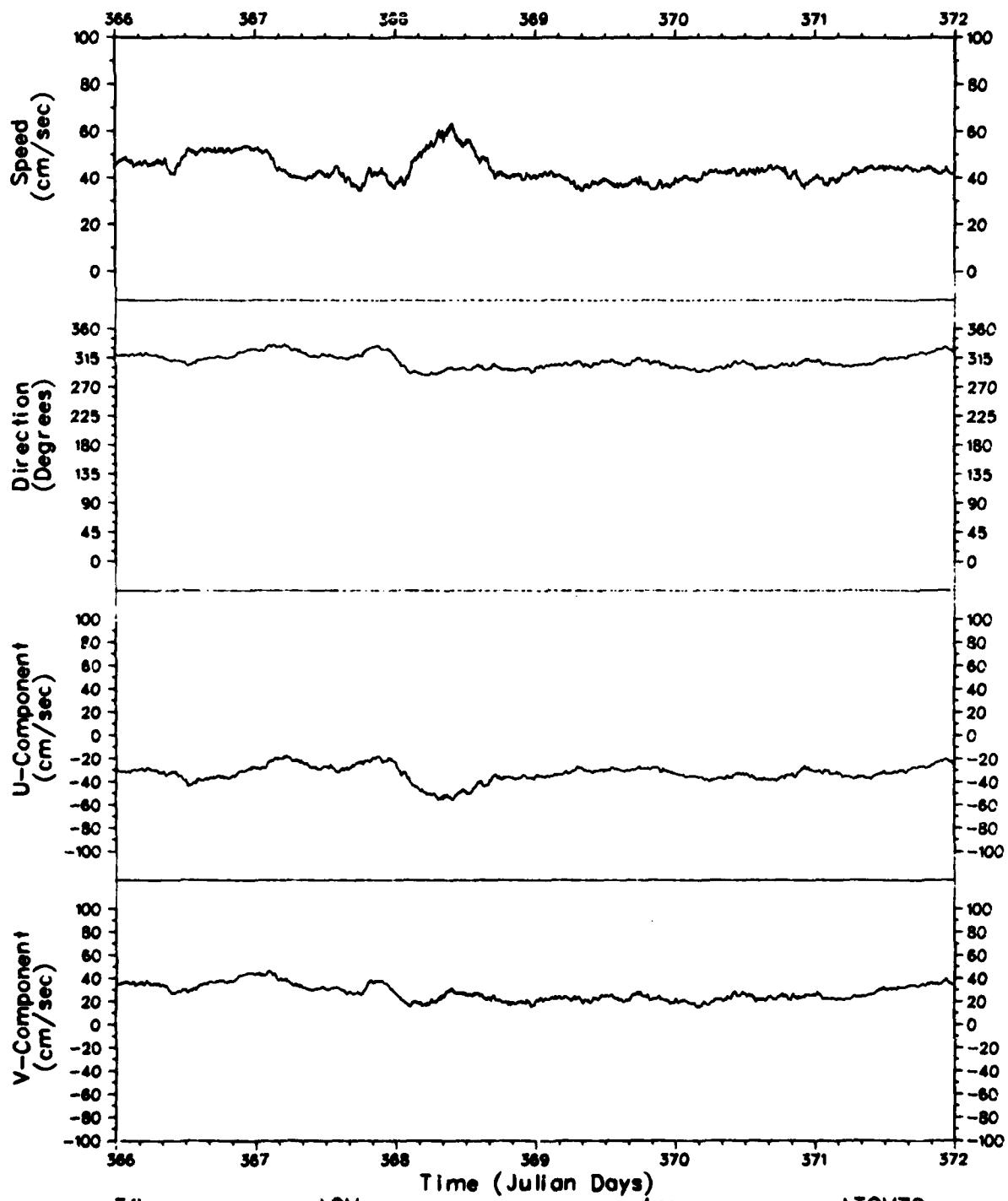
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000200
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 180.



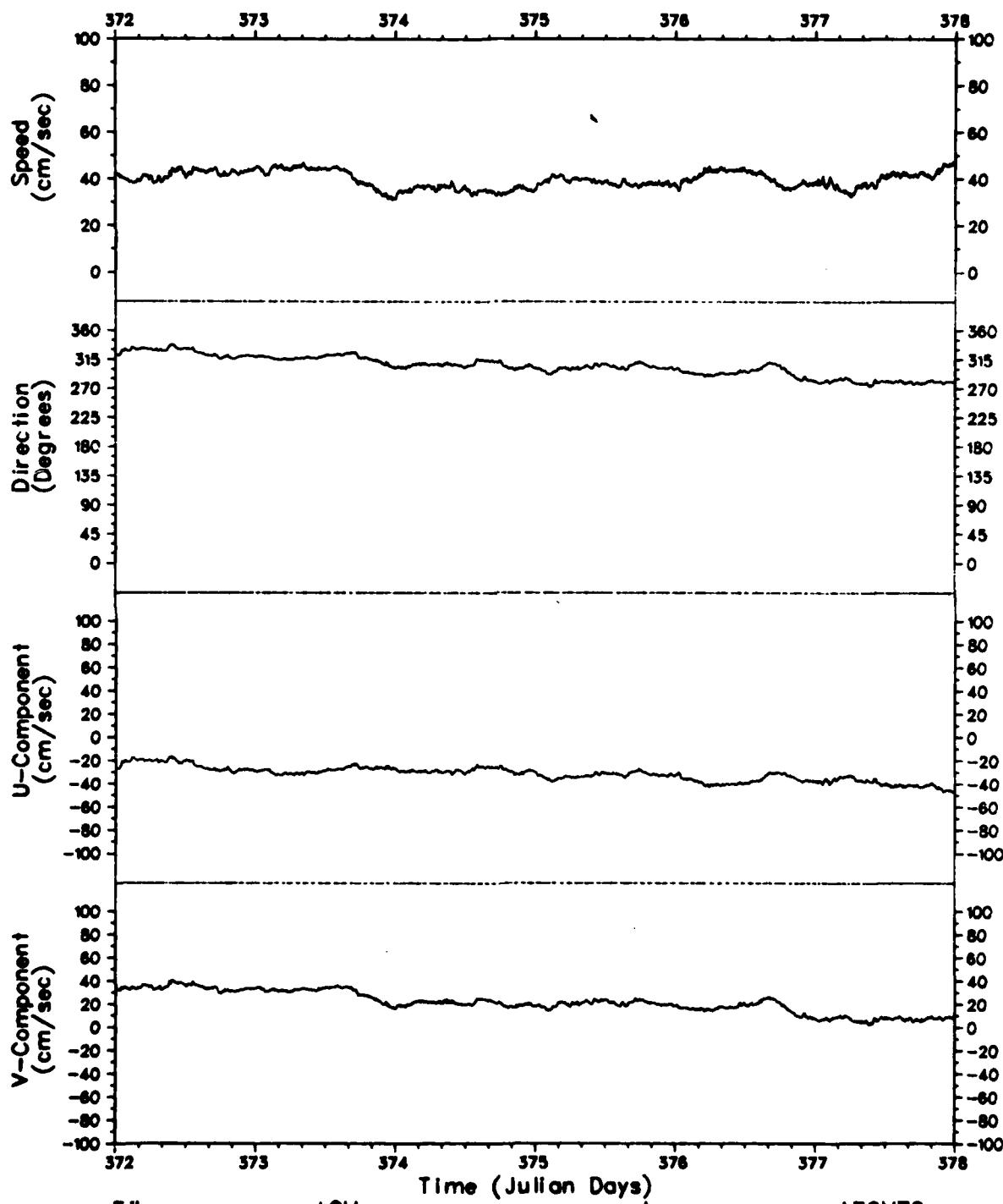
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000200
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1980

Figure 181.



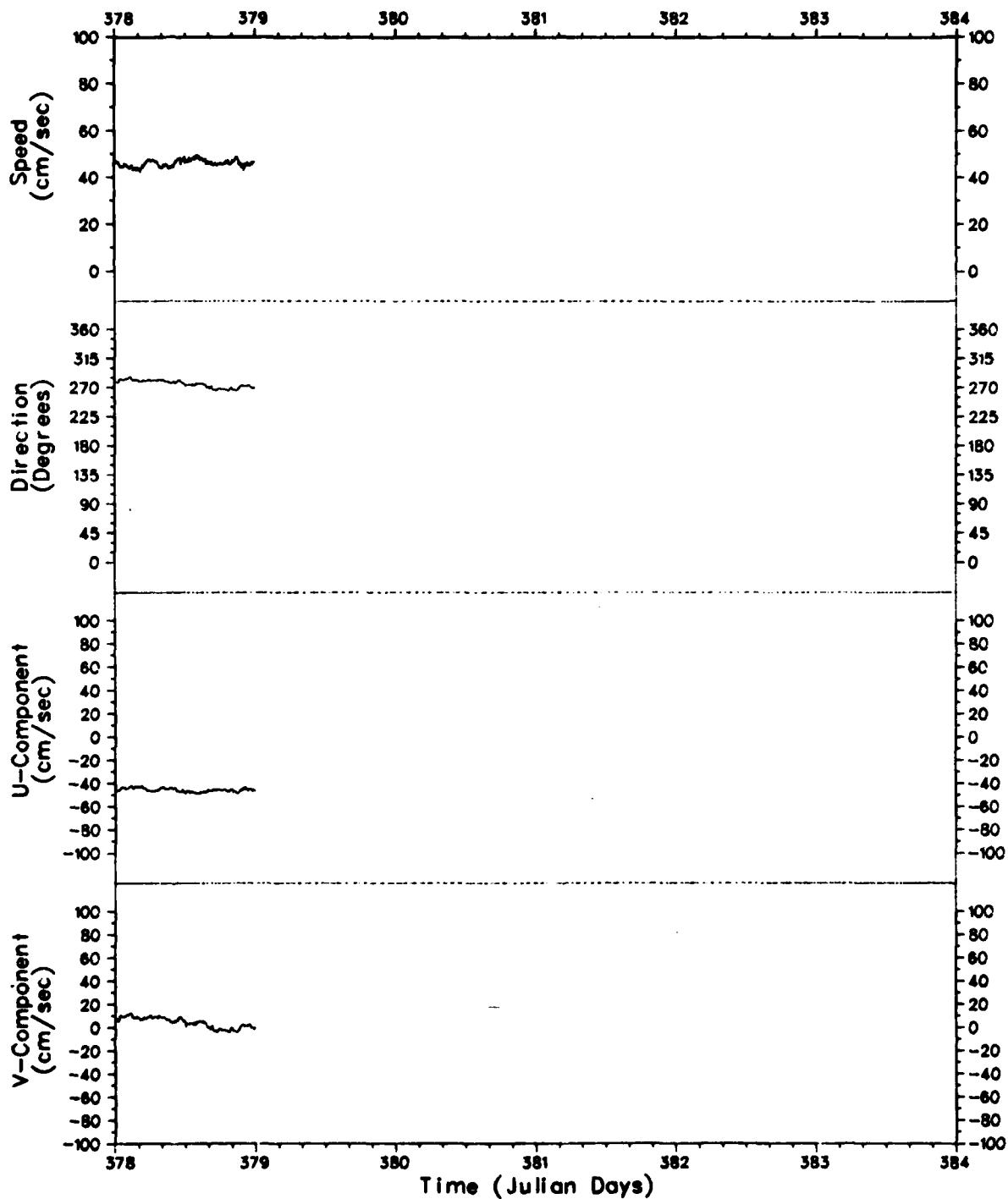
File : ACM Array : ATOM79
 Meter : 790100 Depth : 000200
 Latitude : 25.805555 Start : 19 12 1979
 Longitude : -89.744165 End : 14 01 1980

Figure 182.



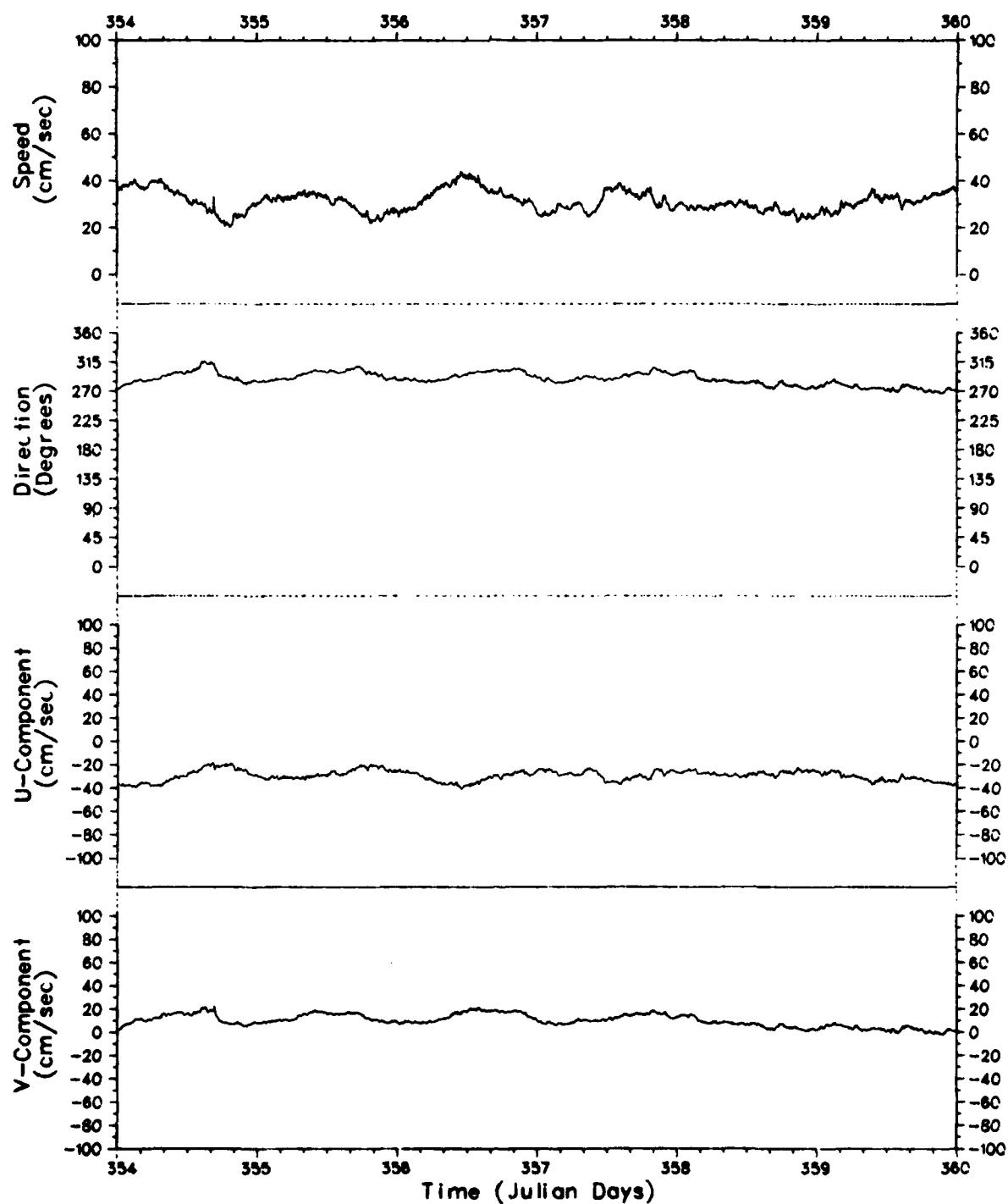
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000200
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 183.



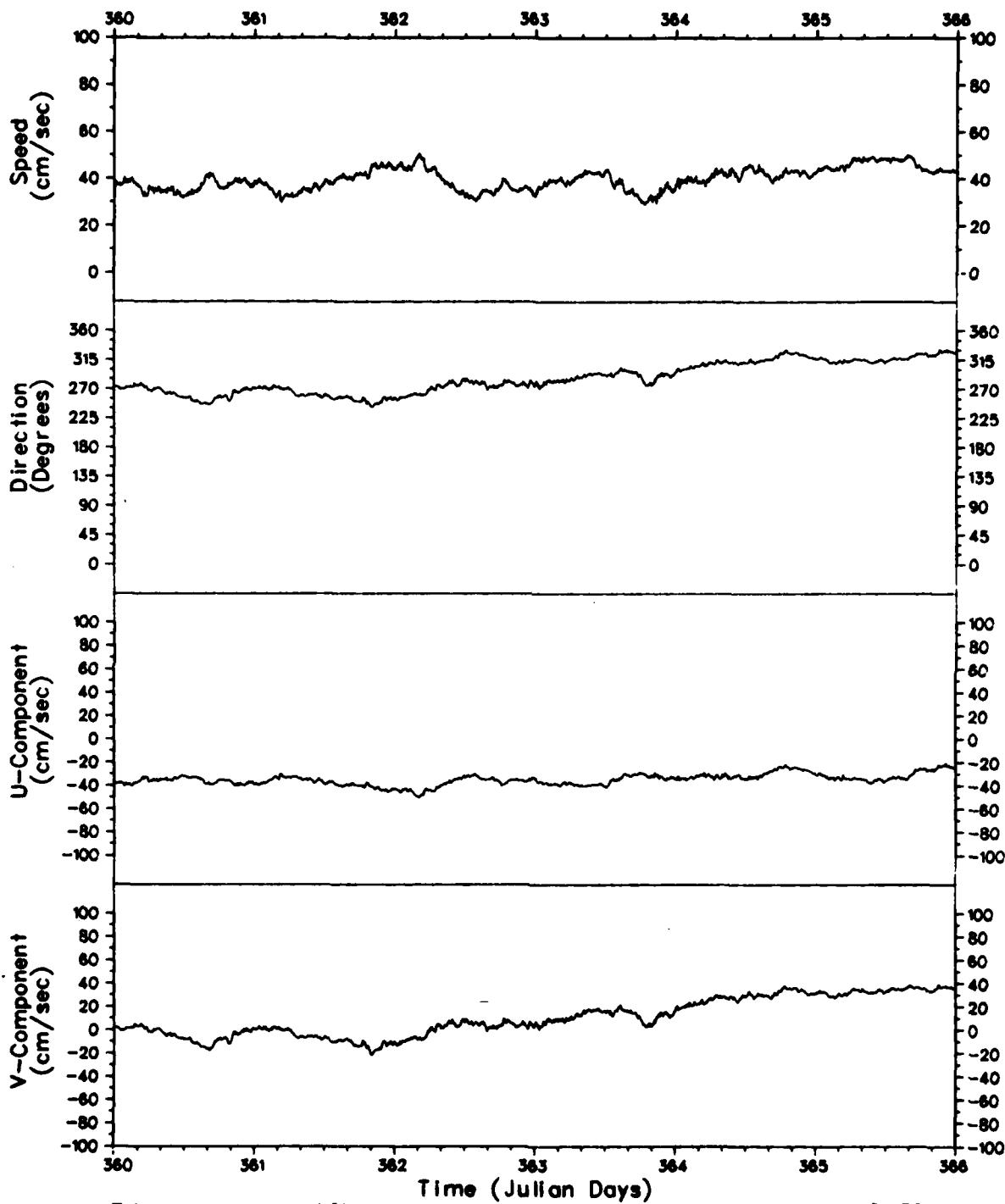
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000200
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89.744165	End :	14 01 1980

Figure 184.



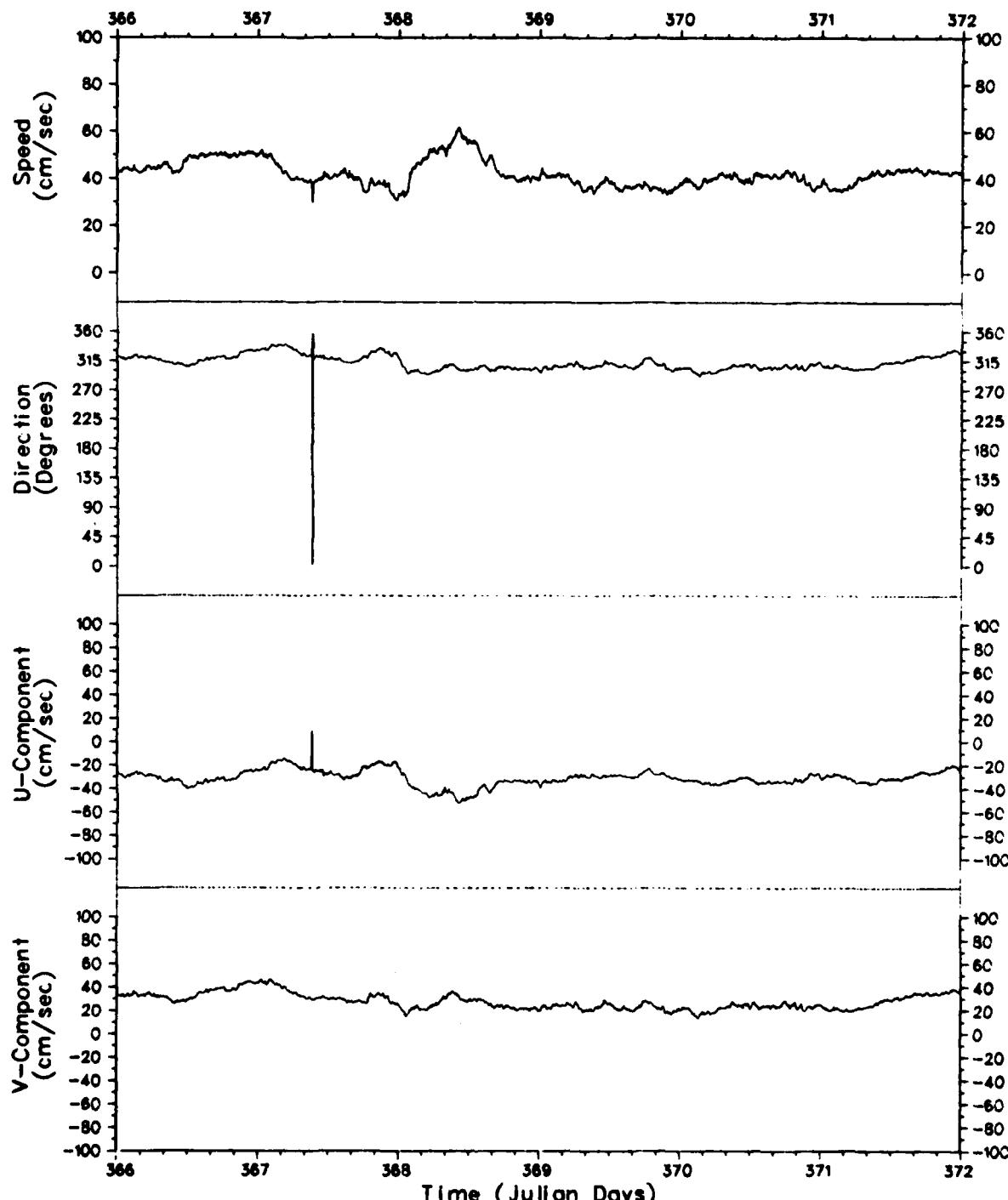
File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000207
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1980

Figure 185.



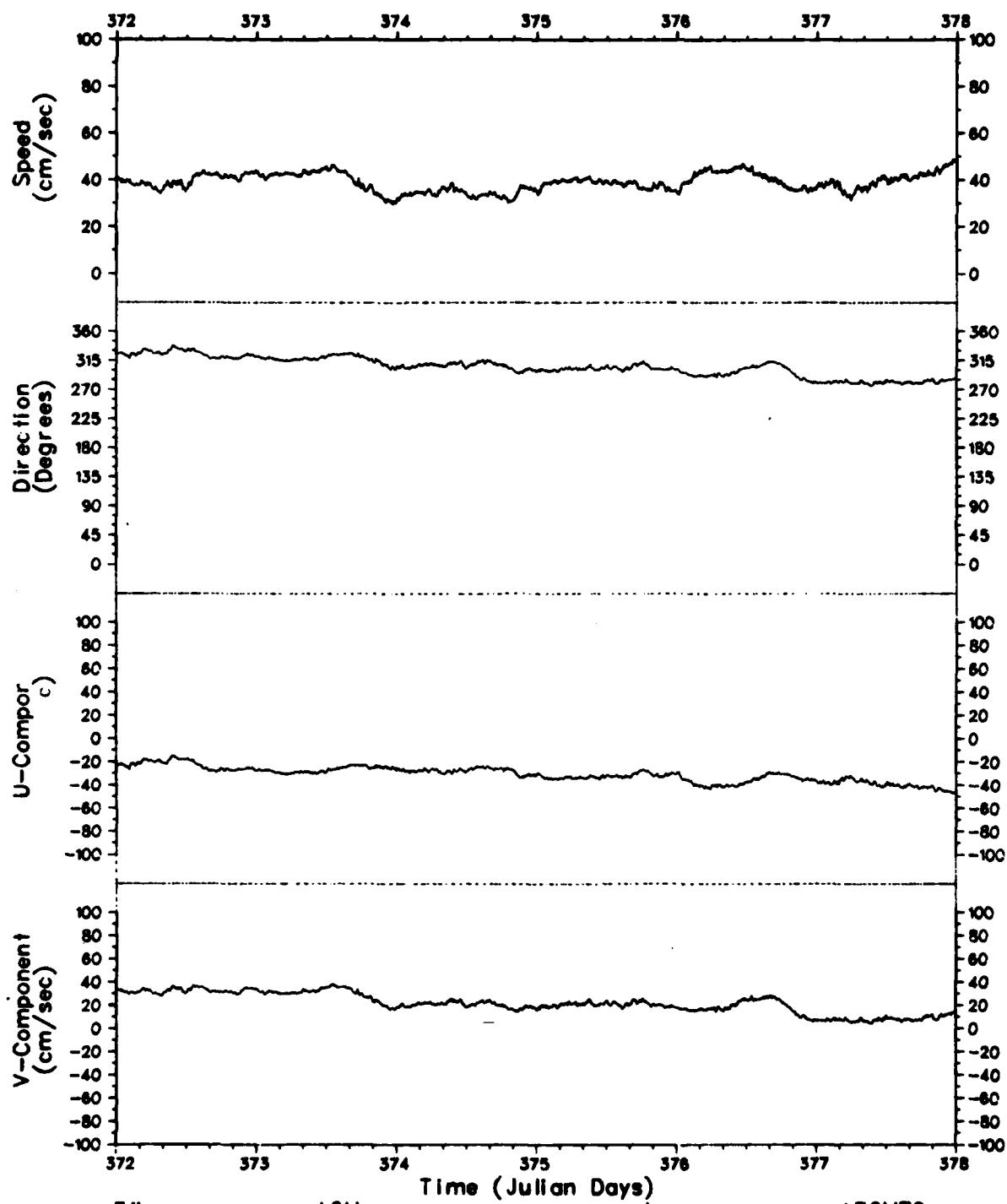
File : ACM Array : ATOM79
 Meter : 790100 Depth : 000207
 Latitude : 25.805555 Start : 19 12 1979
 Longitude : -89.744165 End : 14 01 1980

Figure 186.



File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000207
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1980

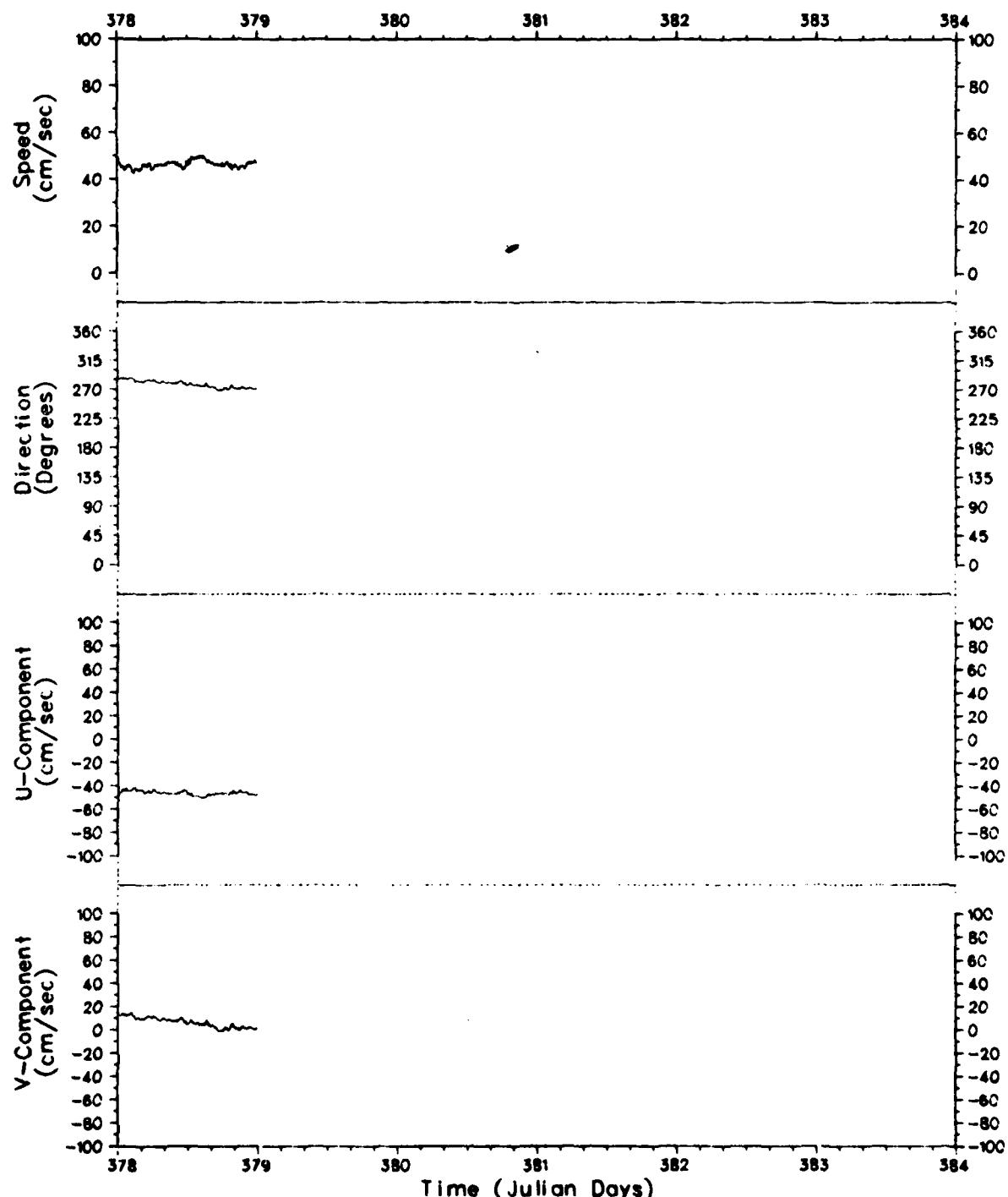
Figure 187.



File : ACM
 Meter : 790100
 Latitude : 25.805555
 Longitude : -89.744165

Array : ATOM79
 Depth : 000207
 Start : 19 12 1979
 End : 14 01 1980

Figure 188.



File :	ACM	Array :	ATOM79
Meter :	790100	Depth :	000207
Latitude :	25.805555	Start :	19 12 1979
Longitude :	-89 744165	End :	14 01 1980

Figure 189.

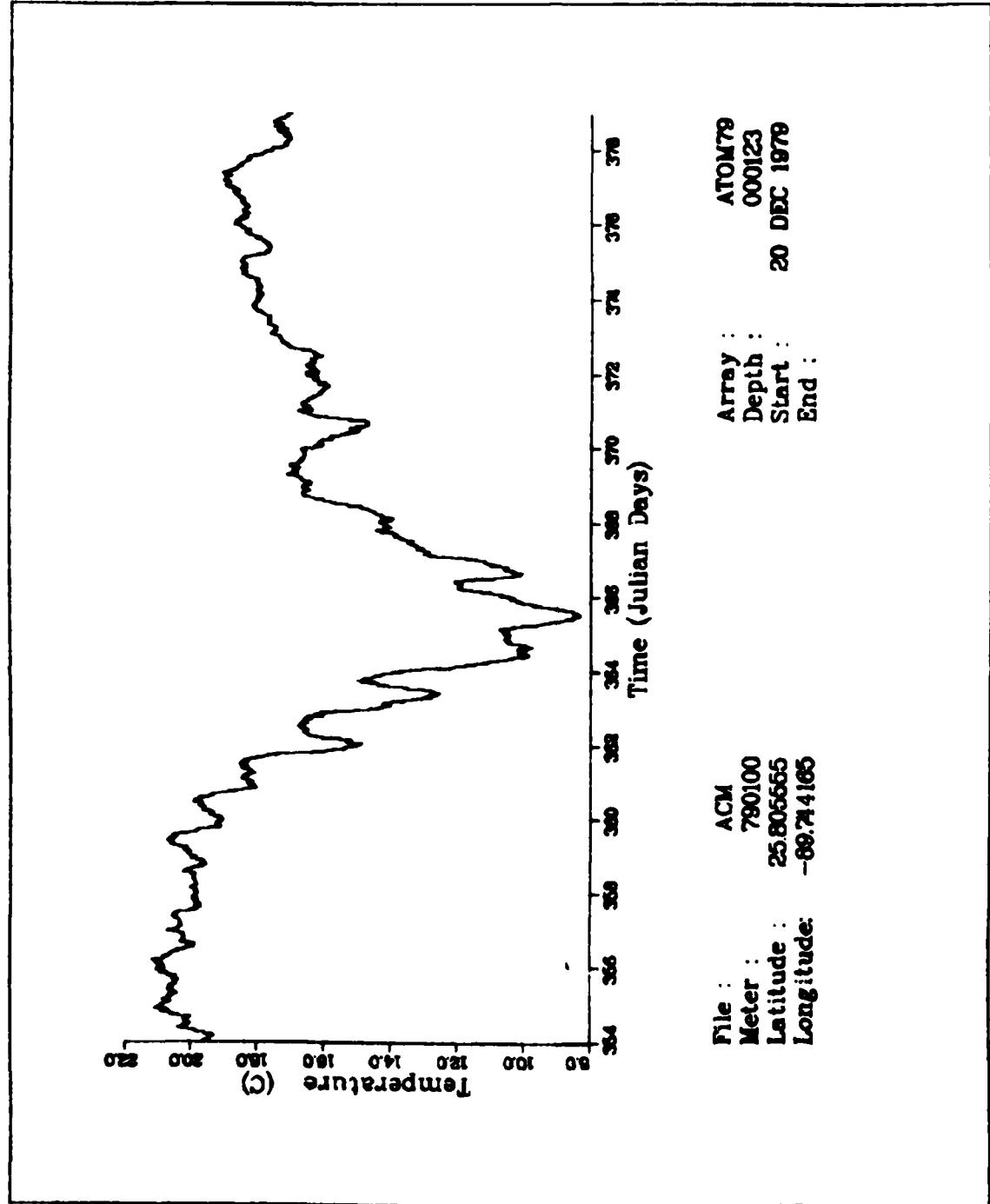


Figure 190.

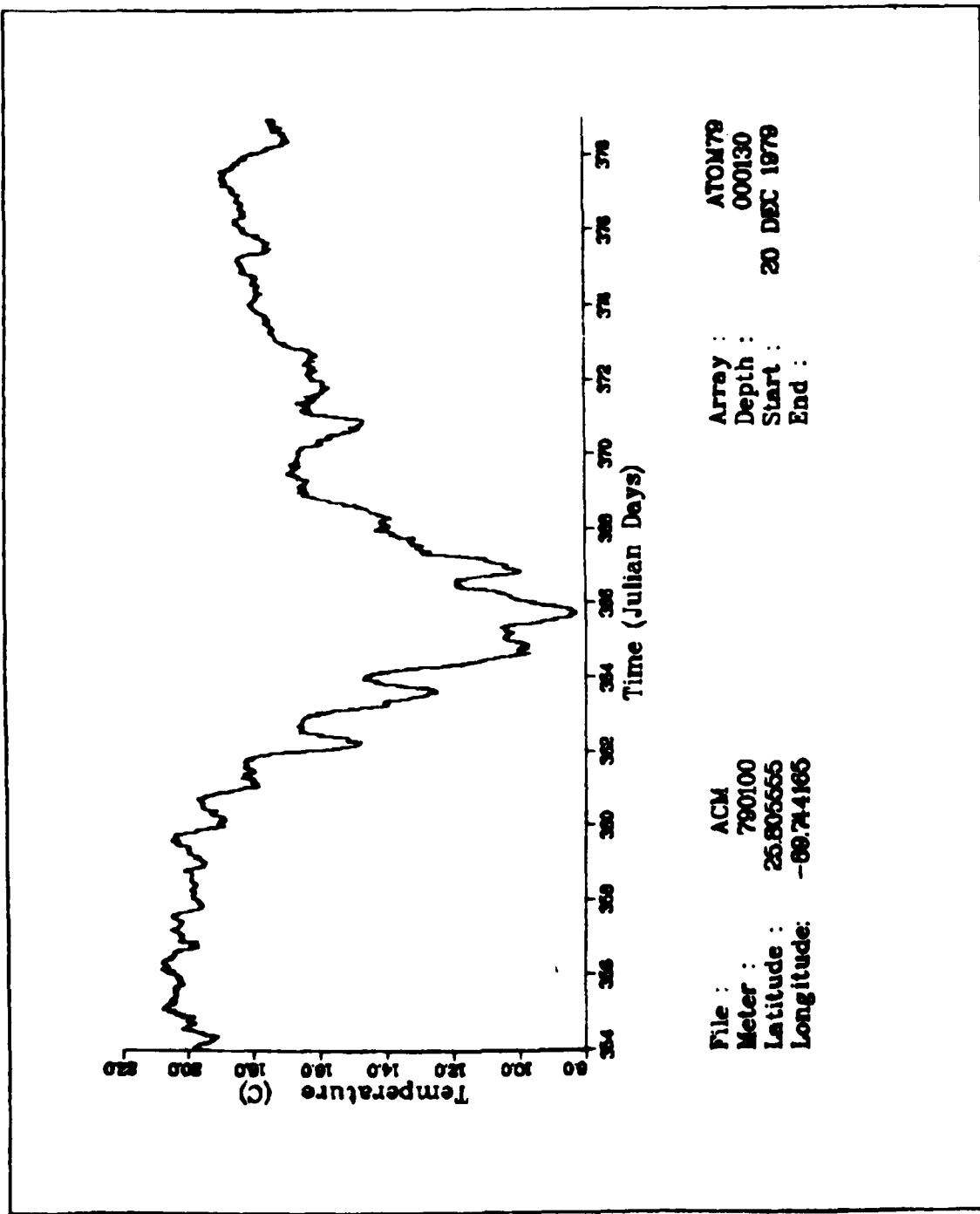


Figure 191.

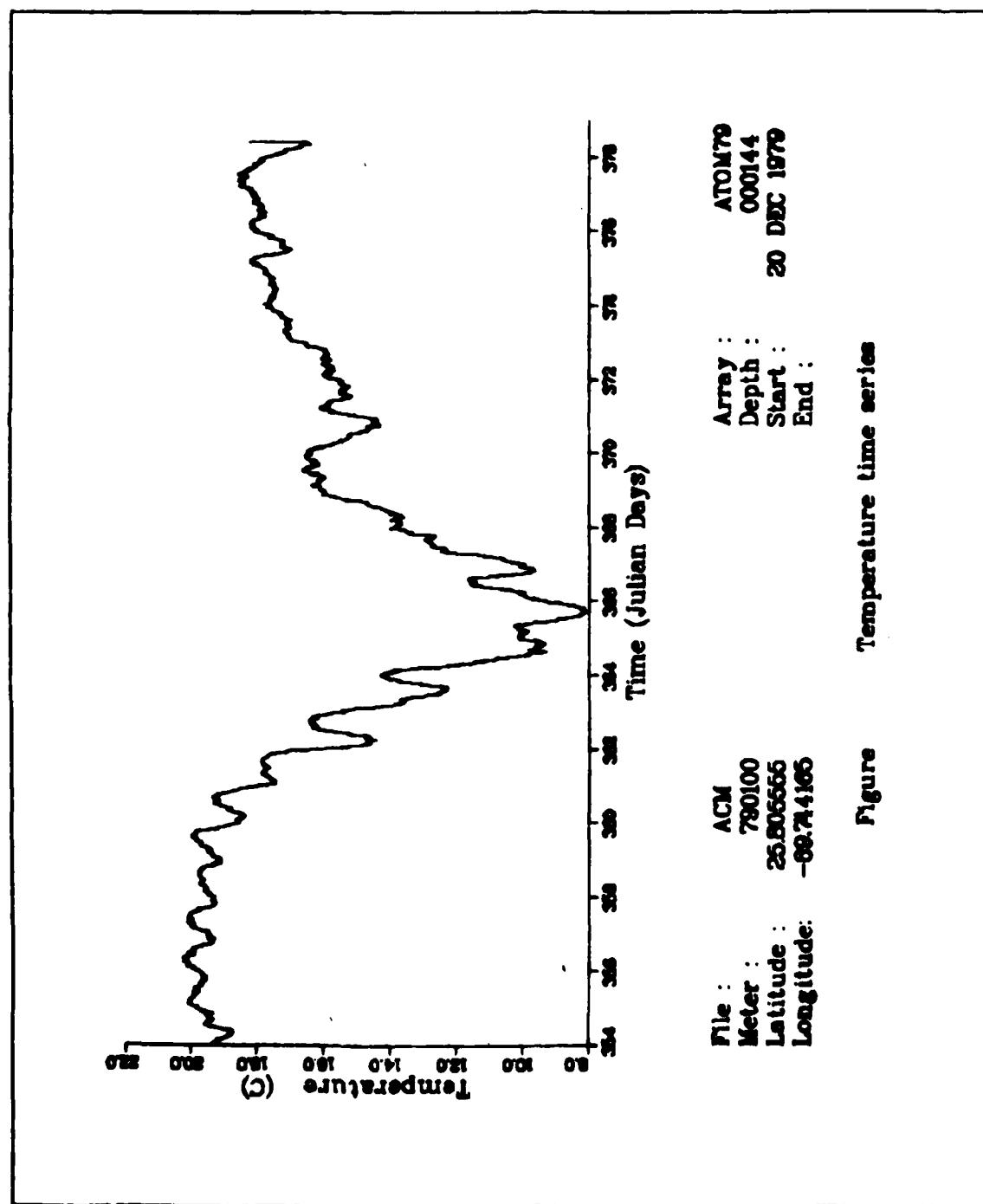


Figure 192. Temperature time series

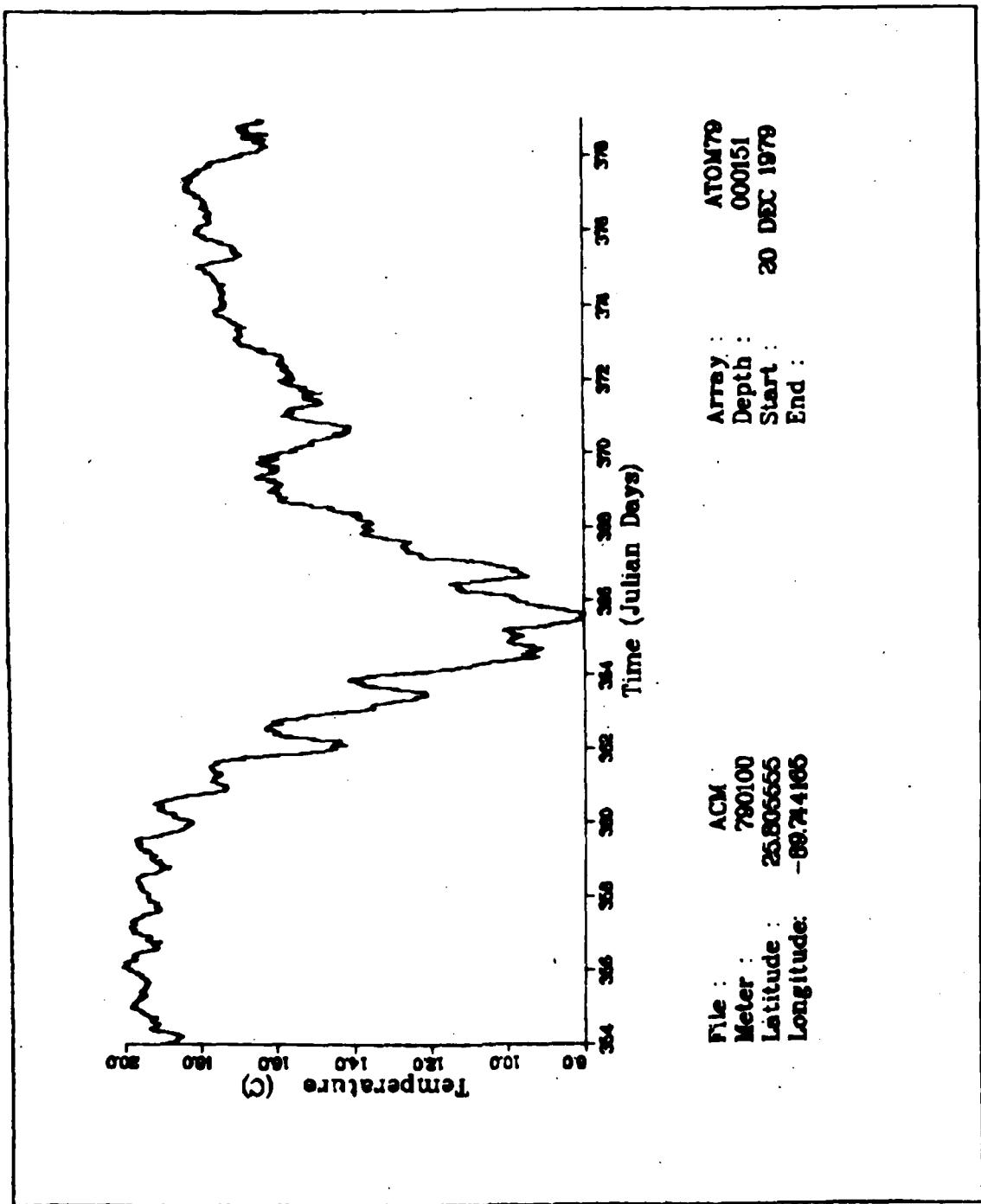


Figure 193.

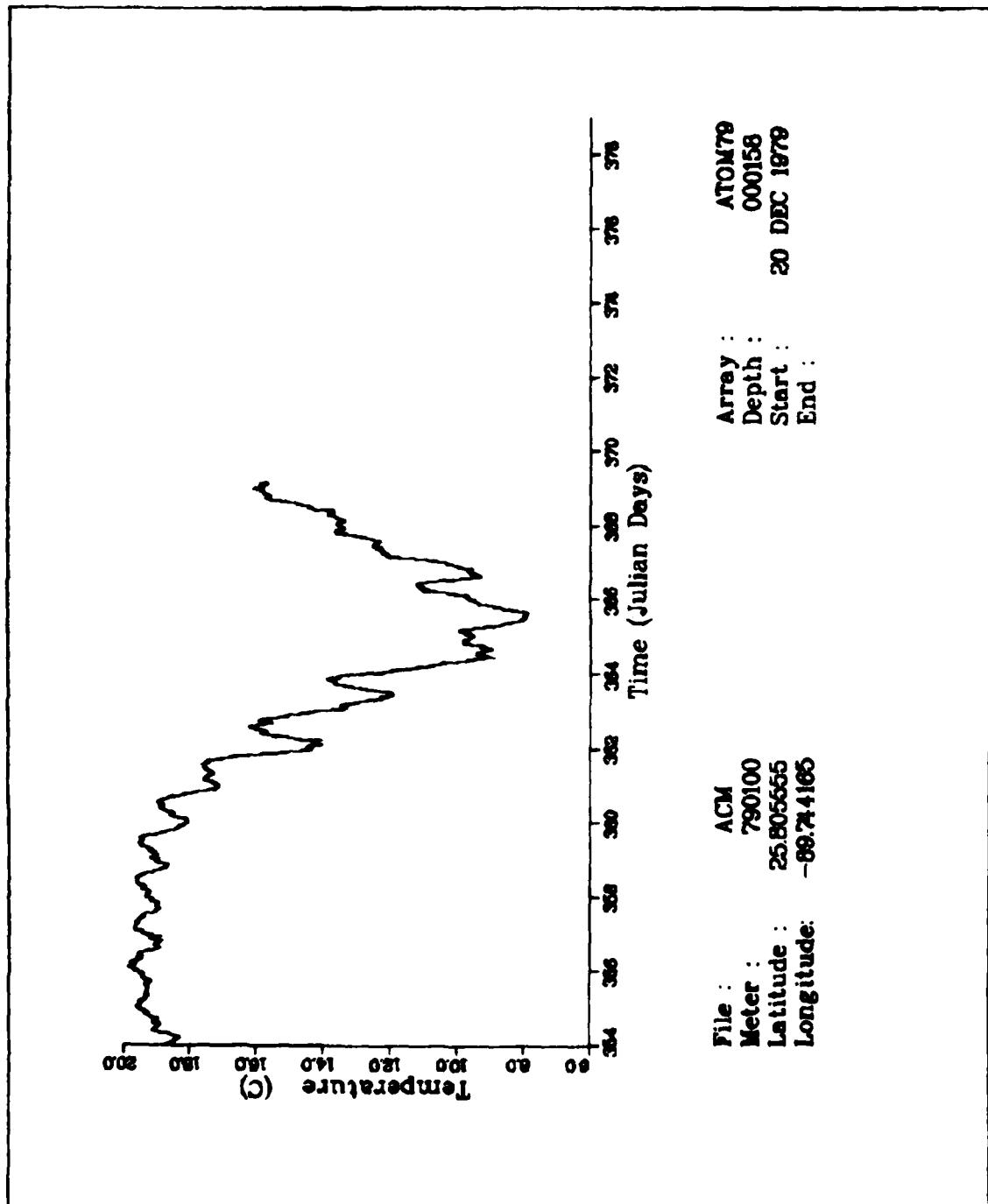


Figure 194.

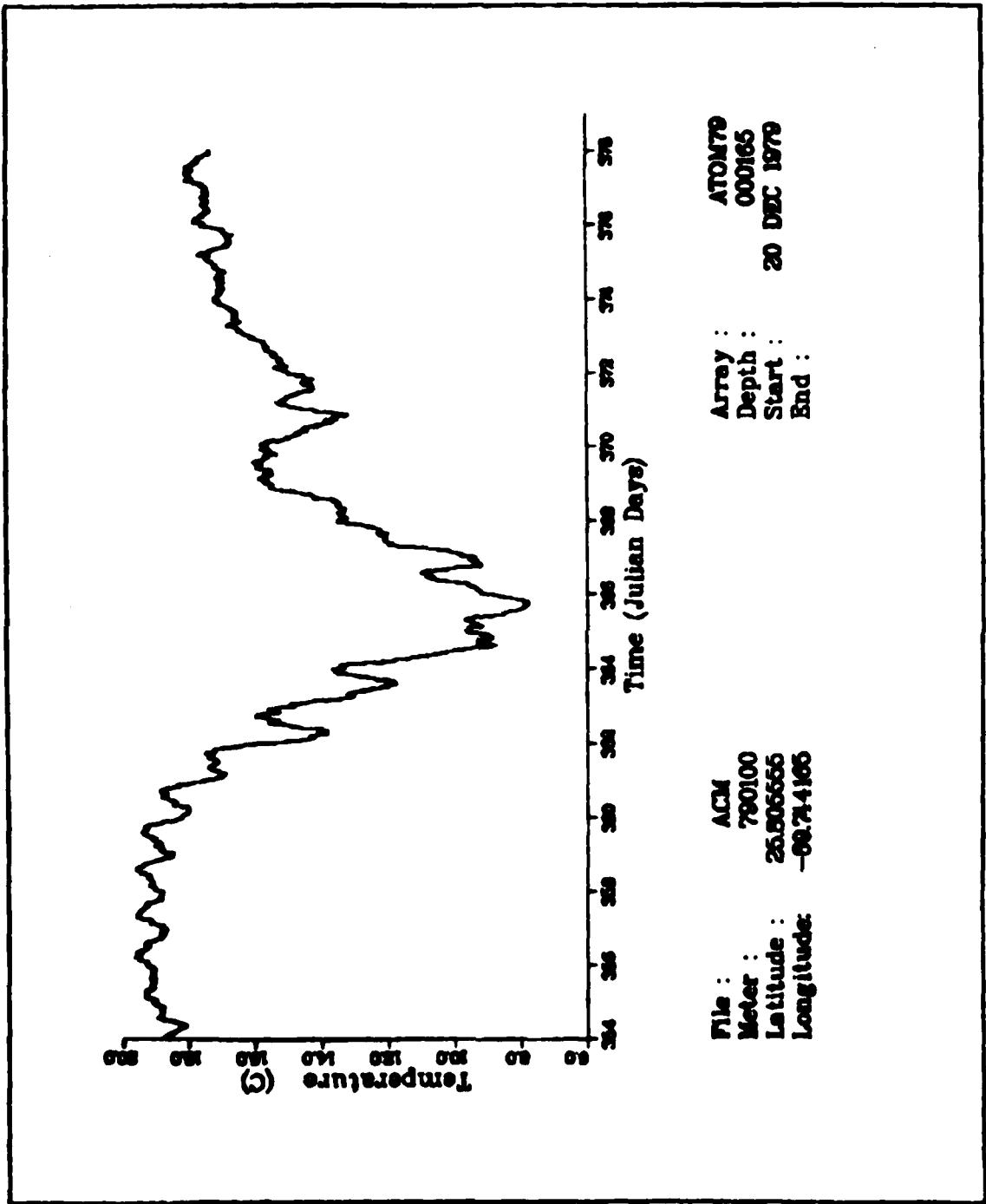


Figure 195.

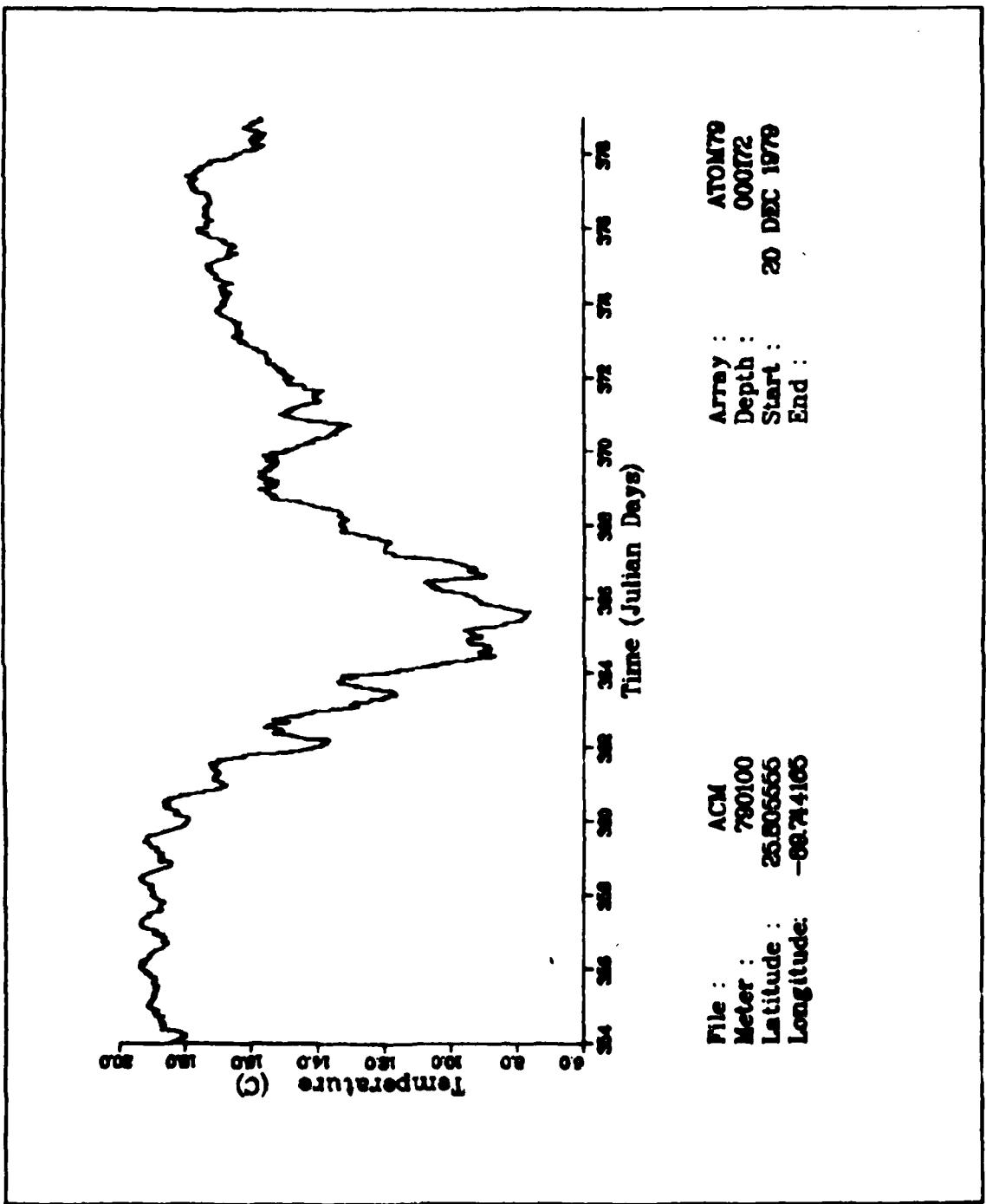


Figure 196.

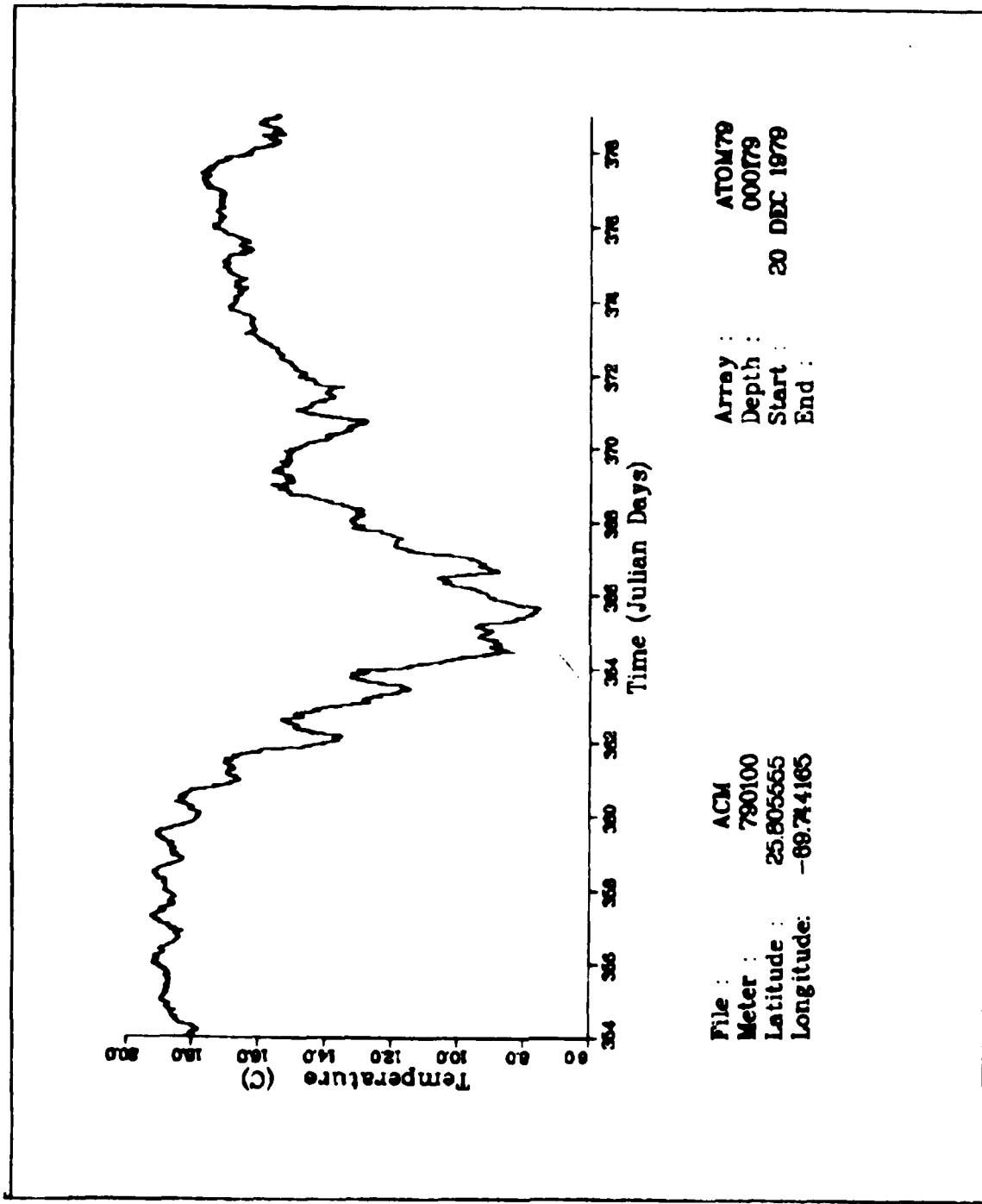


Figure 197.

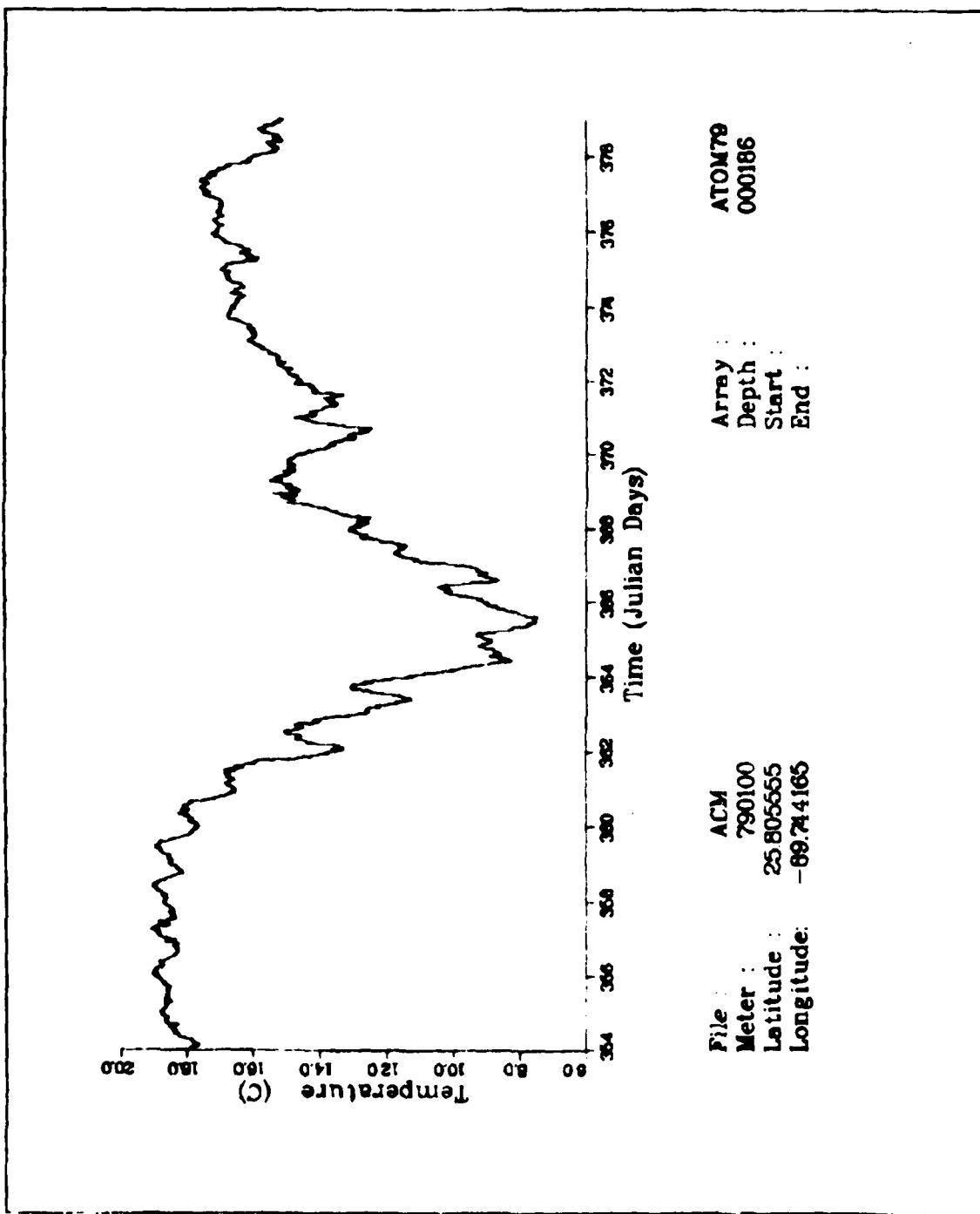


Figure 198.

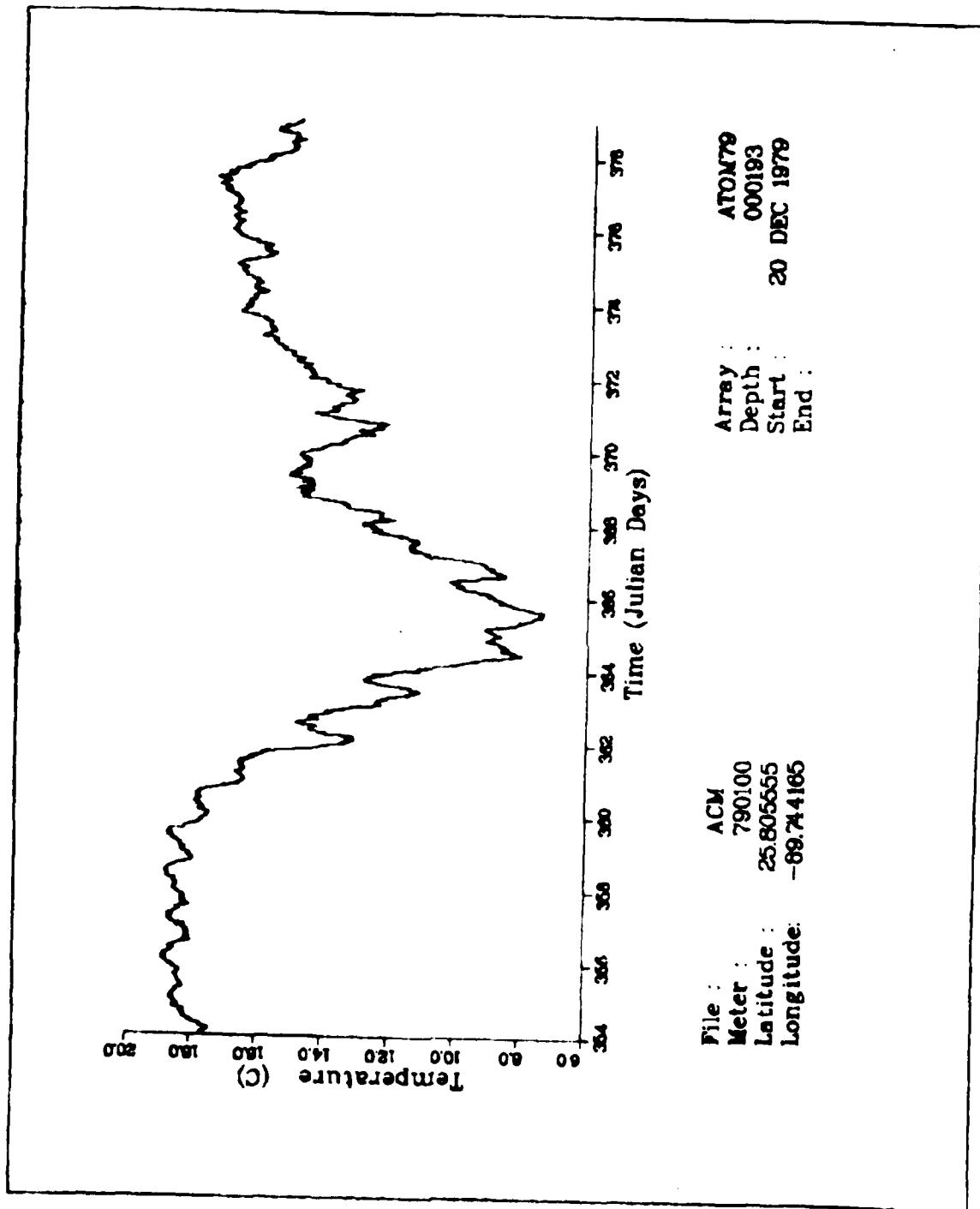


Figure 199.

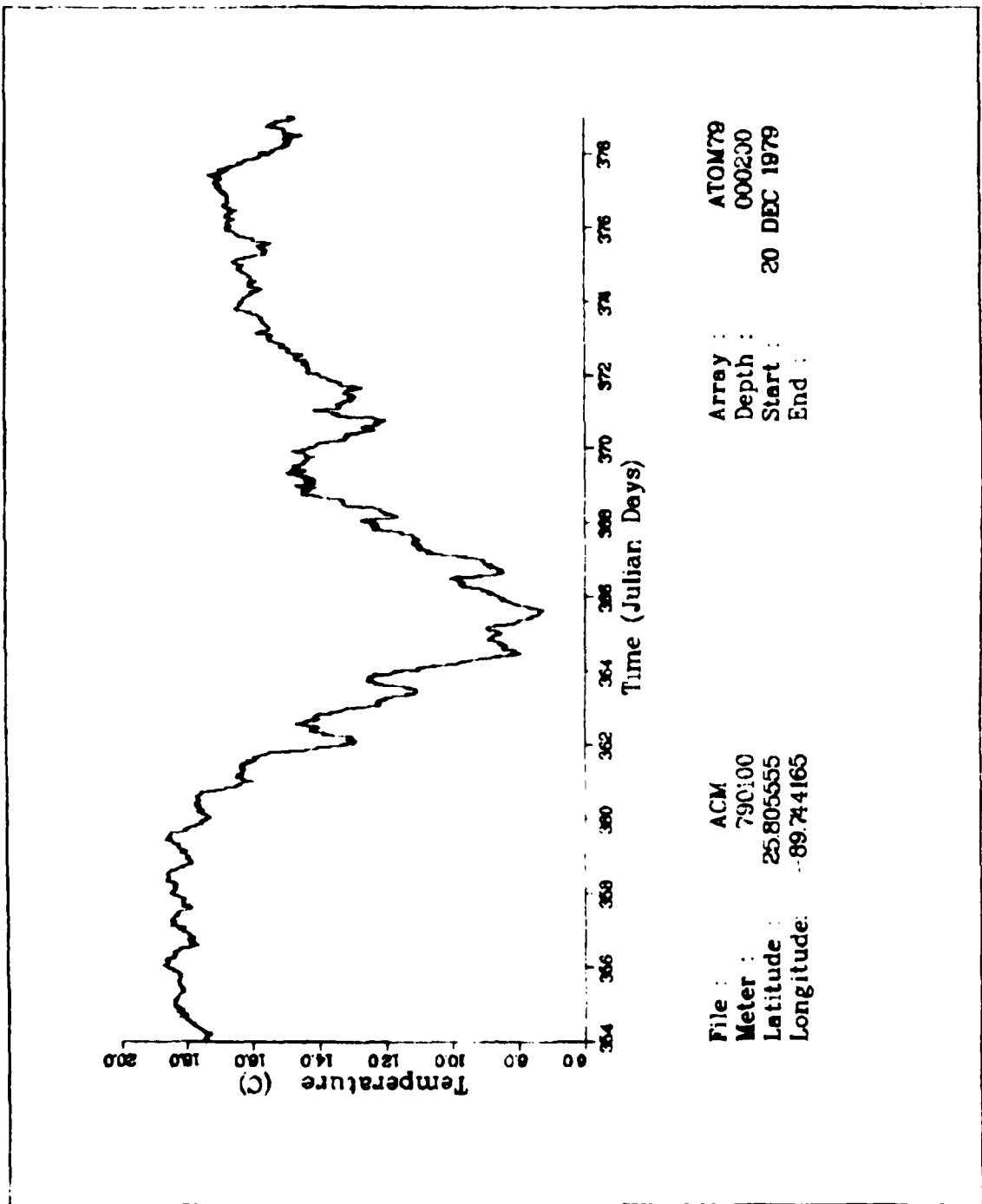


Figure 200.

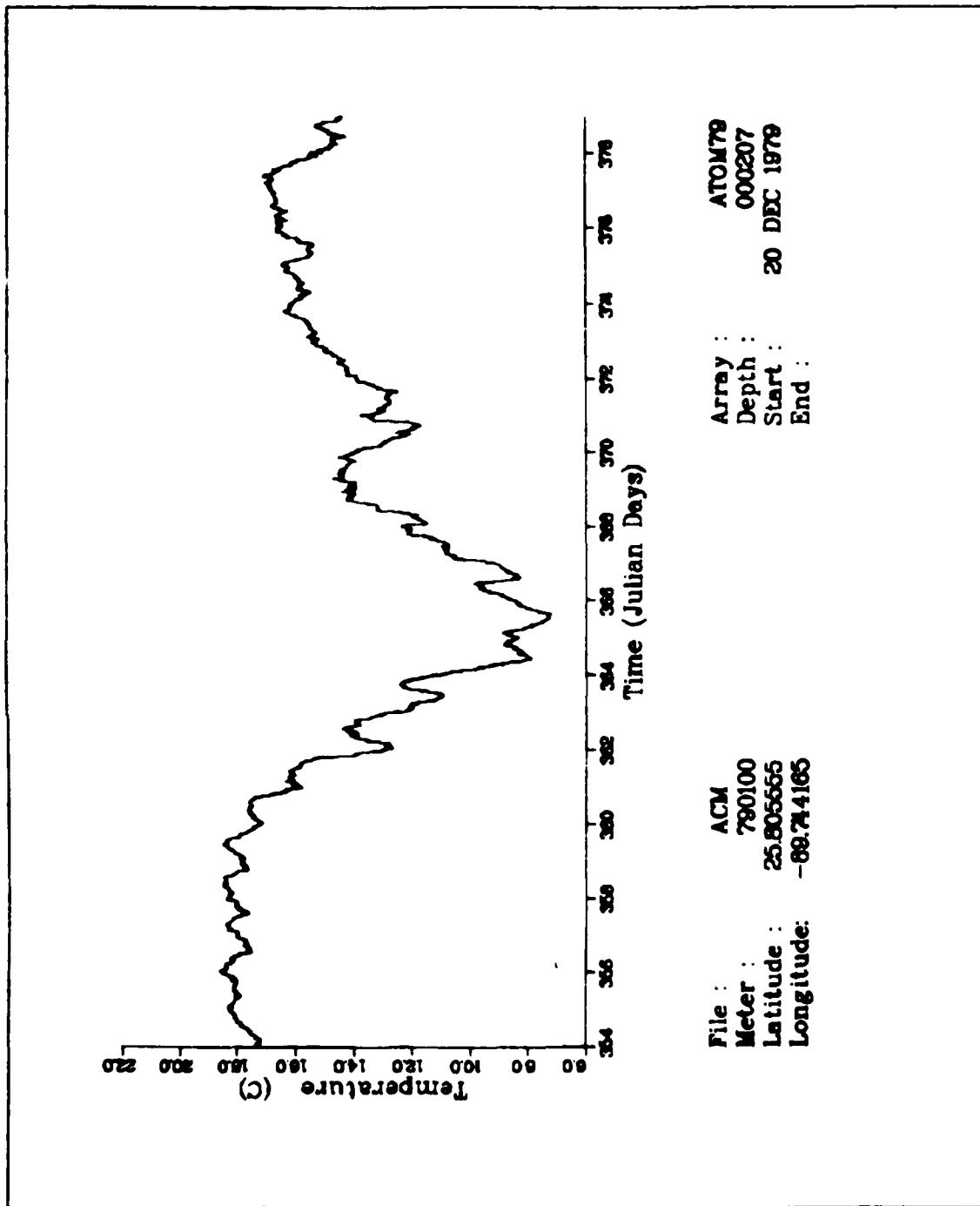
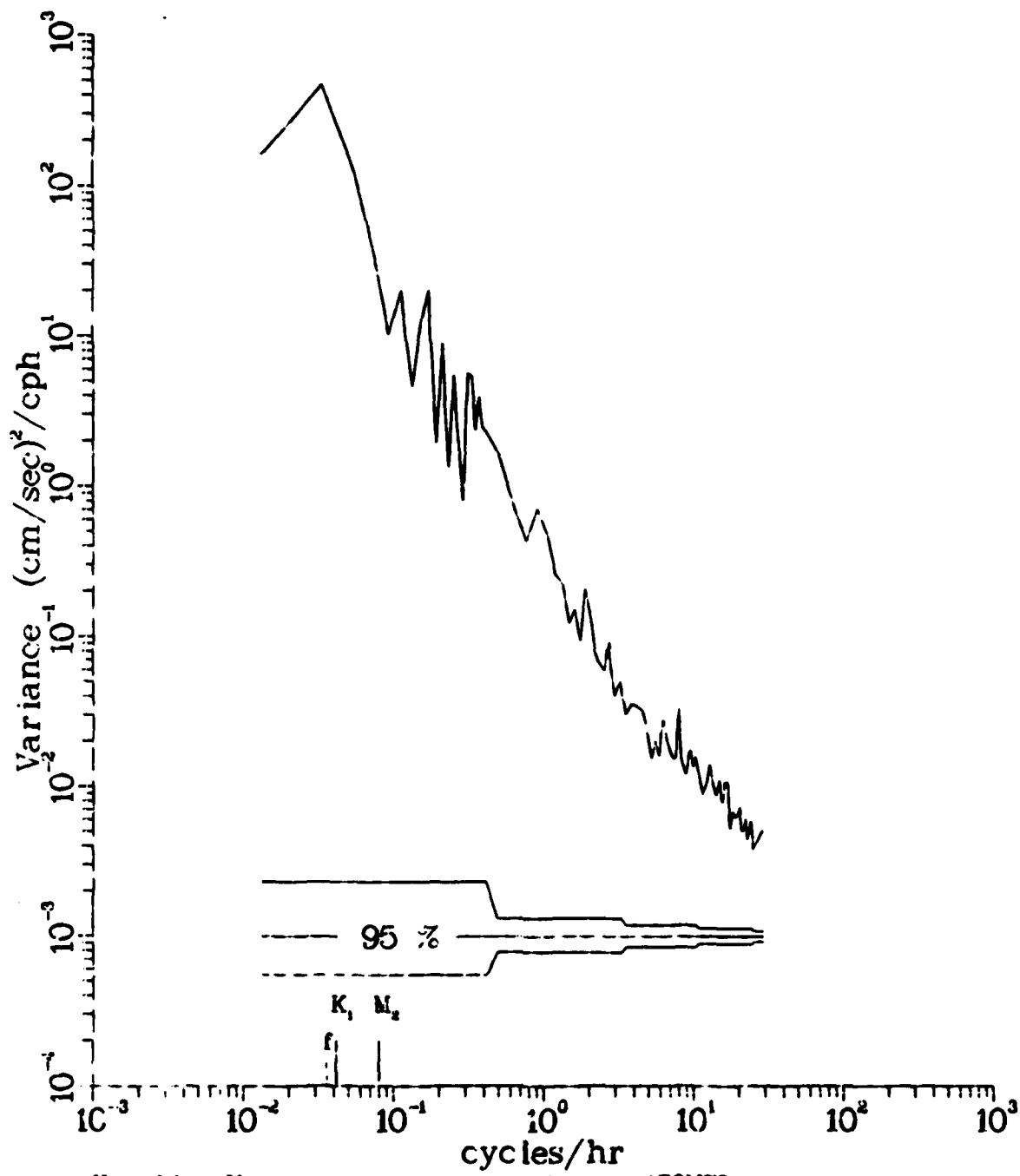


Figure 201.

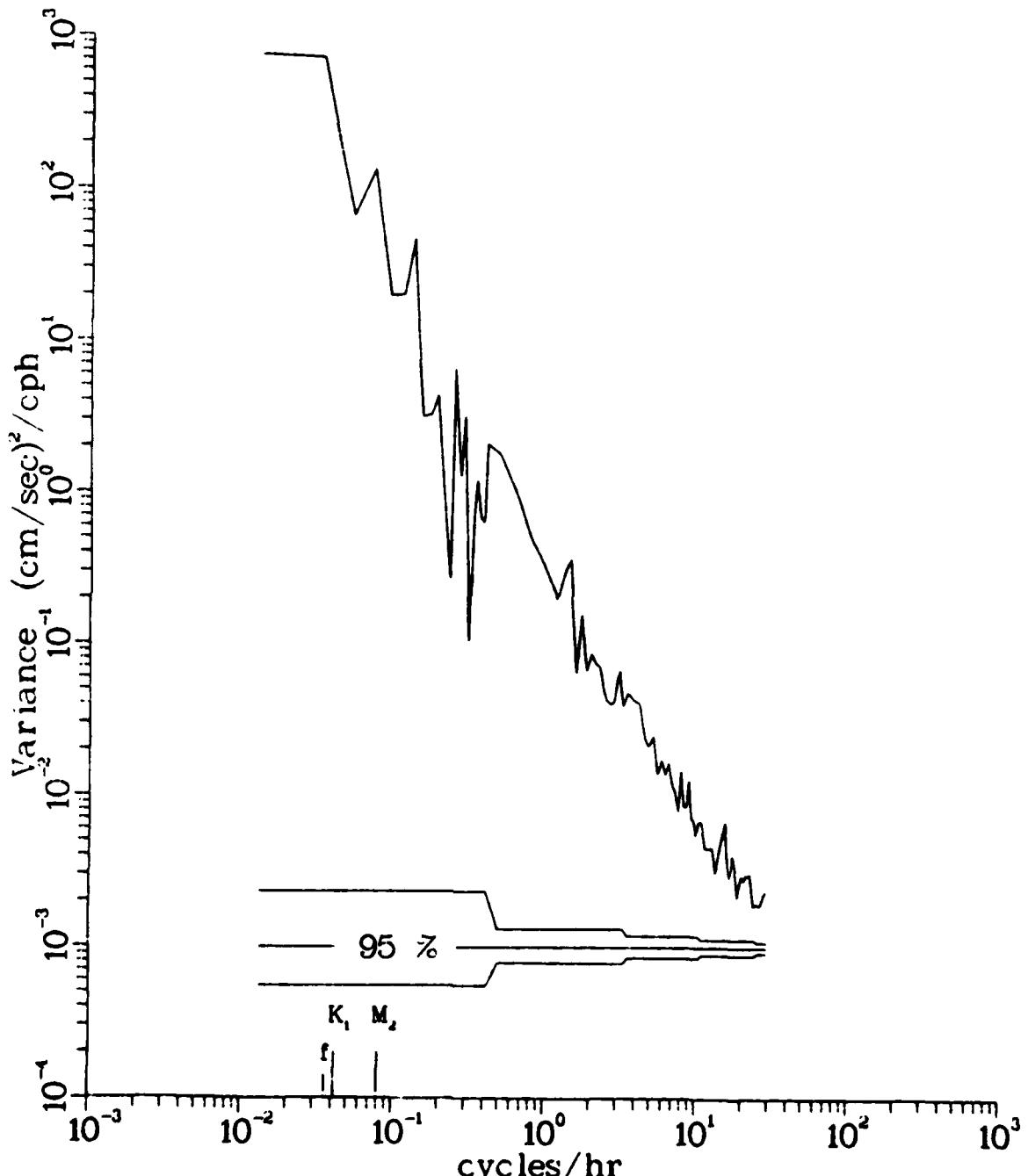
CURRENT SPECTRUM



Variable	U	Array	ATOM79
File	ACM	Depth	000123
Marker	780100	Start	20 DEC 1979
Lat	25.805553	End	28 DEC 1979
Long	-89.74165		

Figure 202.

CURRENT SPECTRUM

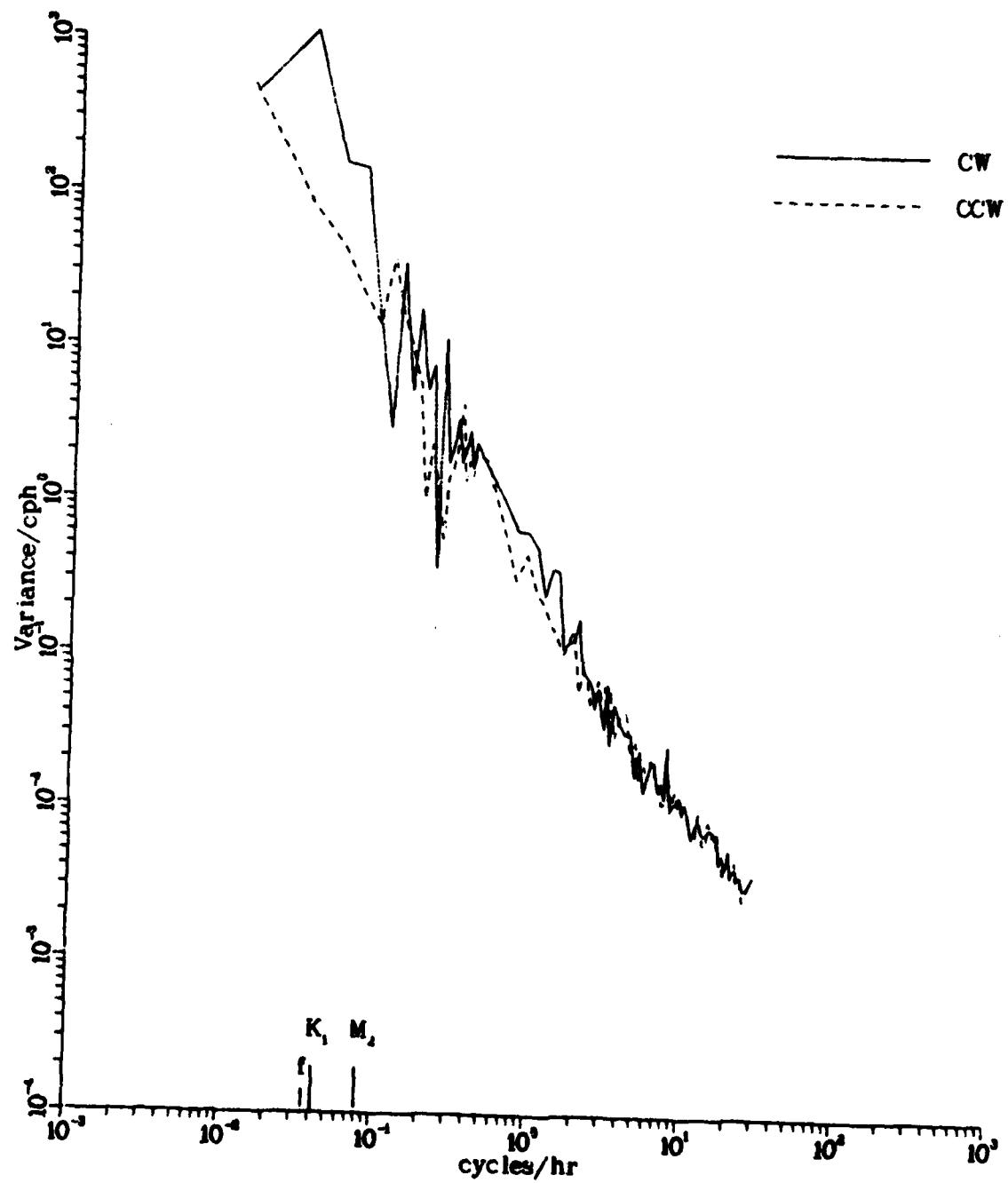


Variable V
 File ACM
 Meter 790100
 Lat 25.805555
 Long -89.244165

Array ATOM79
 Depth 000123
 Start 20 DEC 1979
 End 26 DEC 1979

Figure 203.

ROTARY SPECTRUM

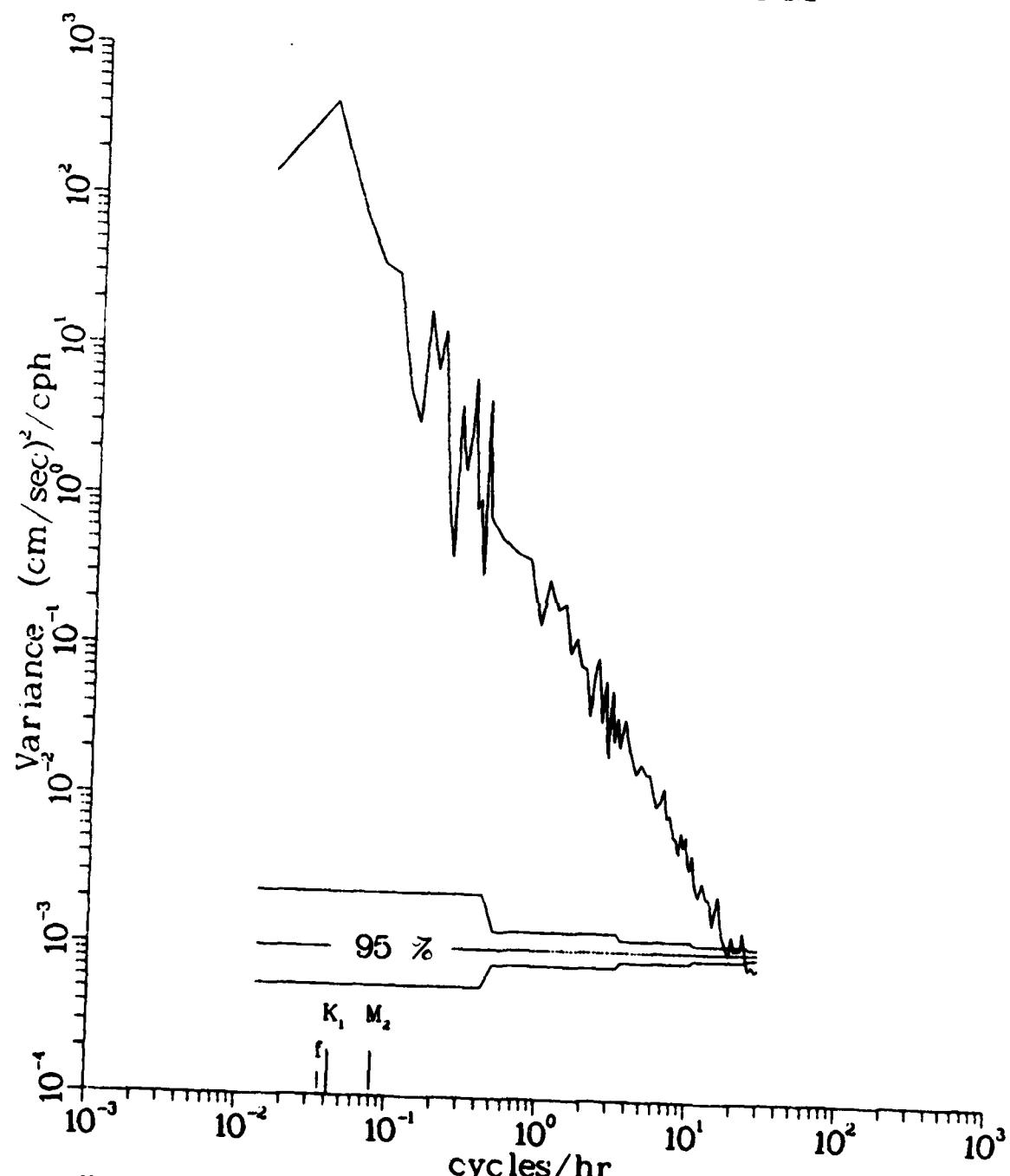


Variable : U
 Depth : 000123
 Meter : 790100
 Lat. : 25.805555
 Long : -89.714165

Variable : V
 Depth : 000123
 Meter : 790100
 Lat. : 25.805555
 Long : -89.714165

Figure 204.

CURRENT SPECTRUM

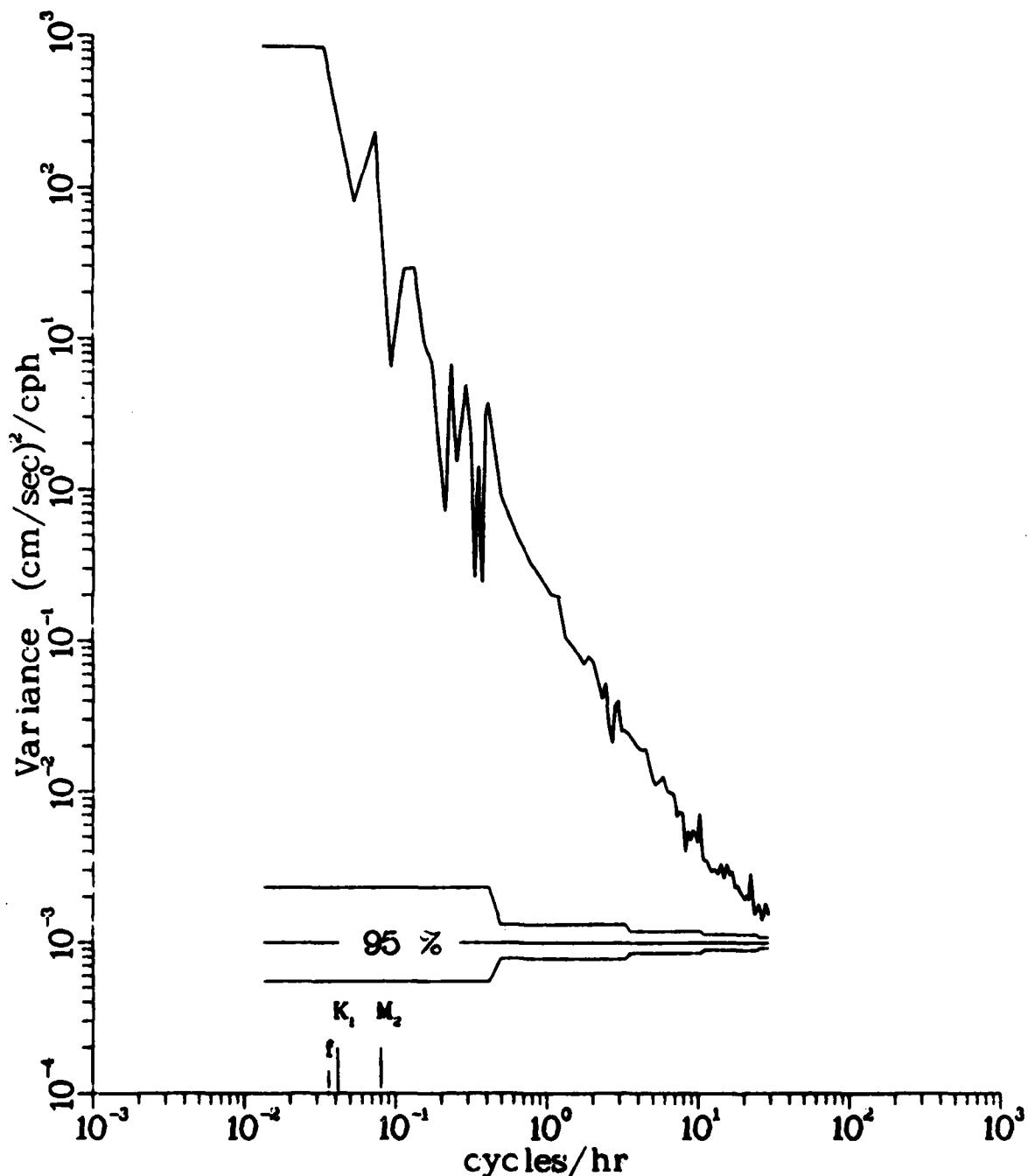


Variable U
File ACM
Meter 790100
Lat 25 805355
Long -89 714165

Array ATOM79
Depth 000130
Start 20 DEC 1979
End 26 DEC 1979

Figure 205.

CURRENT SPECTRUM

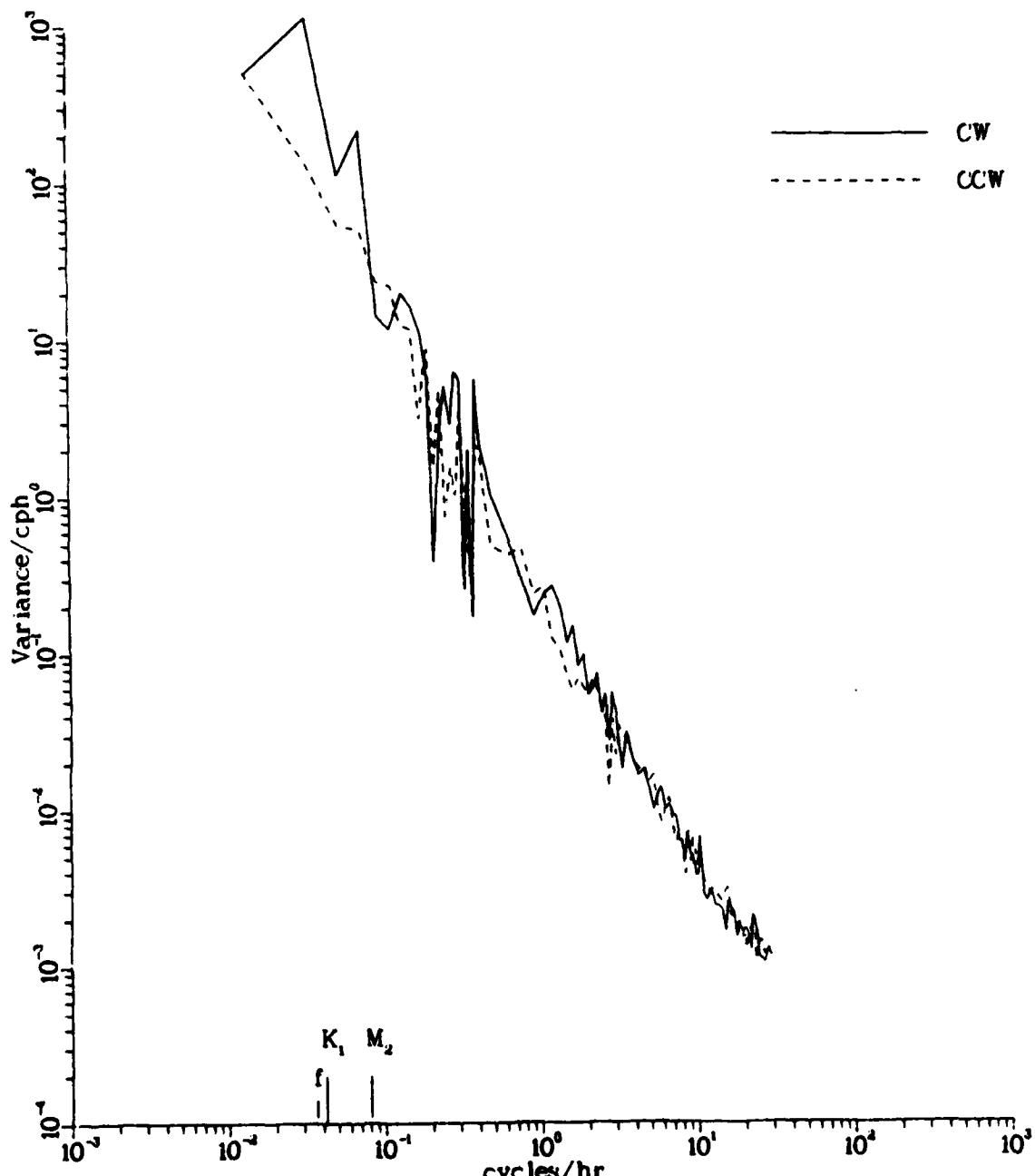


Variable V
File ACM
Meter 780100
Lat. 20.805555
Long -89.74165

Array ATOM79
Depth 000130
Start 20 DEC 1979
End 26 DEC 1979

Figure 206.

ROTARY SPECTRUM

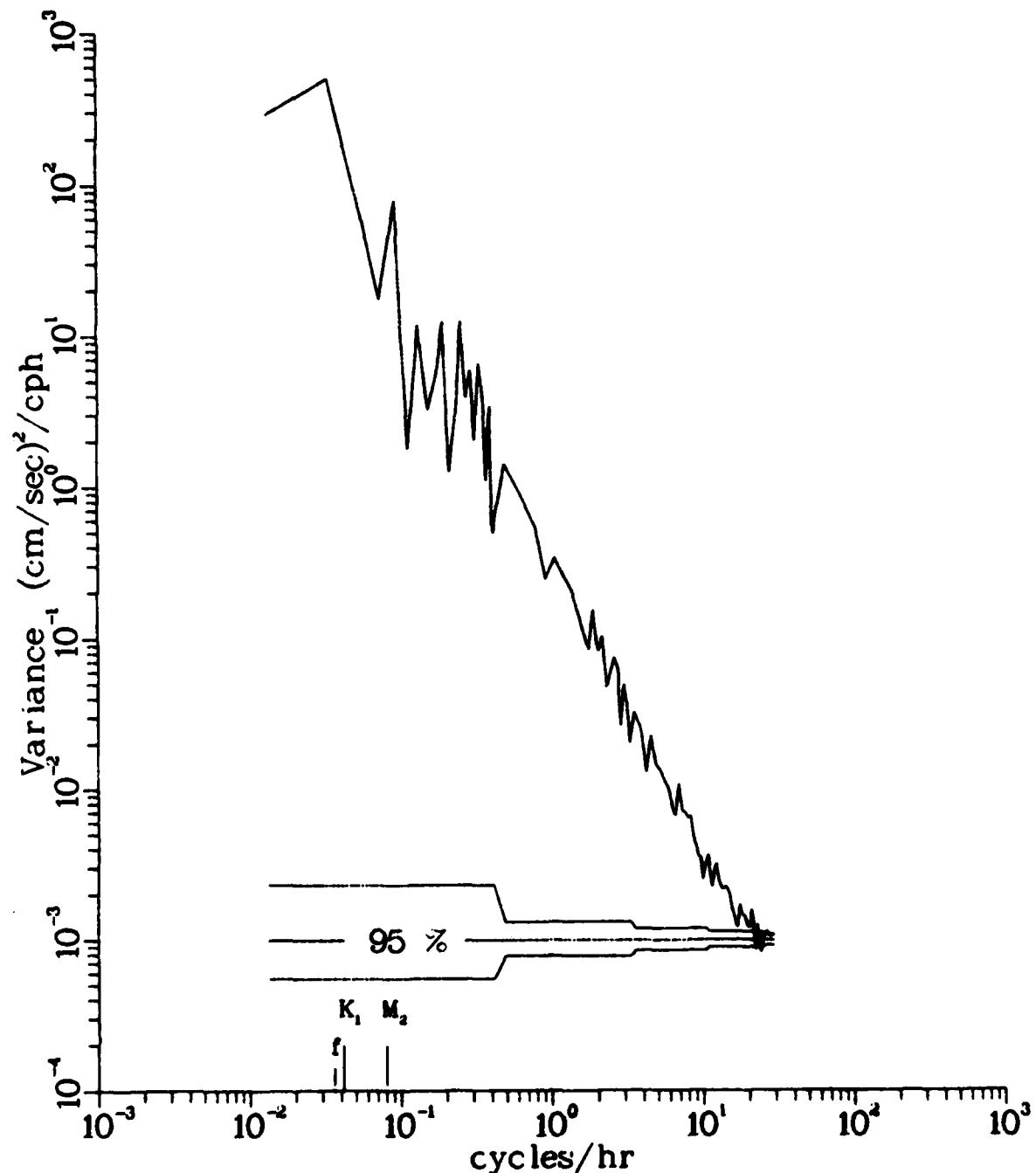


Variable U
 Depth 000130
 Meter 790100
 Lat 25.805553
 Long -89 74 165

Variable V
 Depth 000130
 Meter 790100
 Lat 25.805555
 Long -89 74 165

Figure 207.

CURRENT SPECTRUM

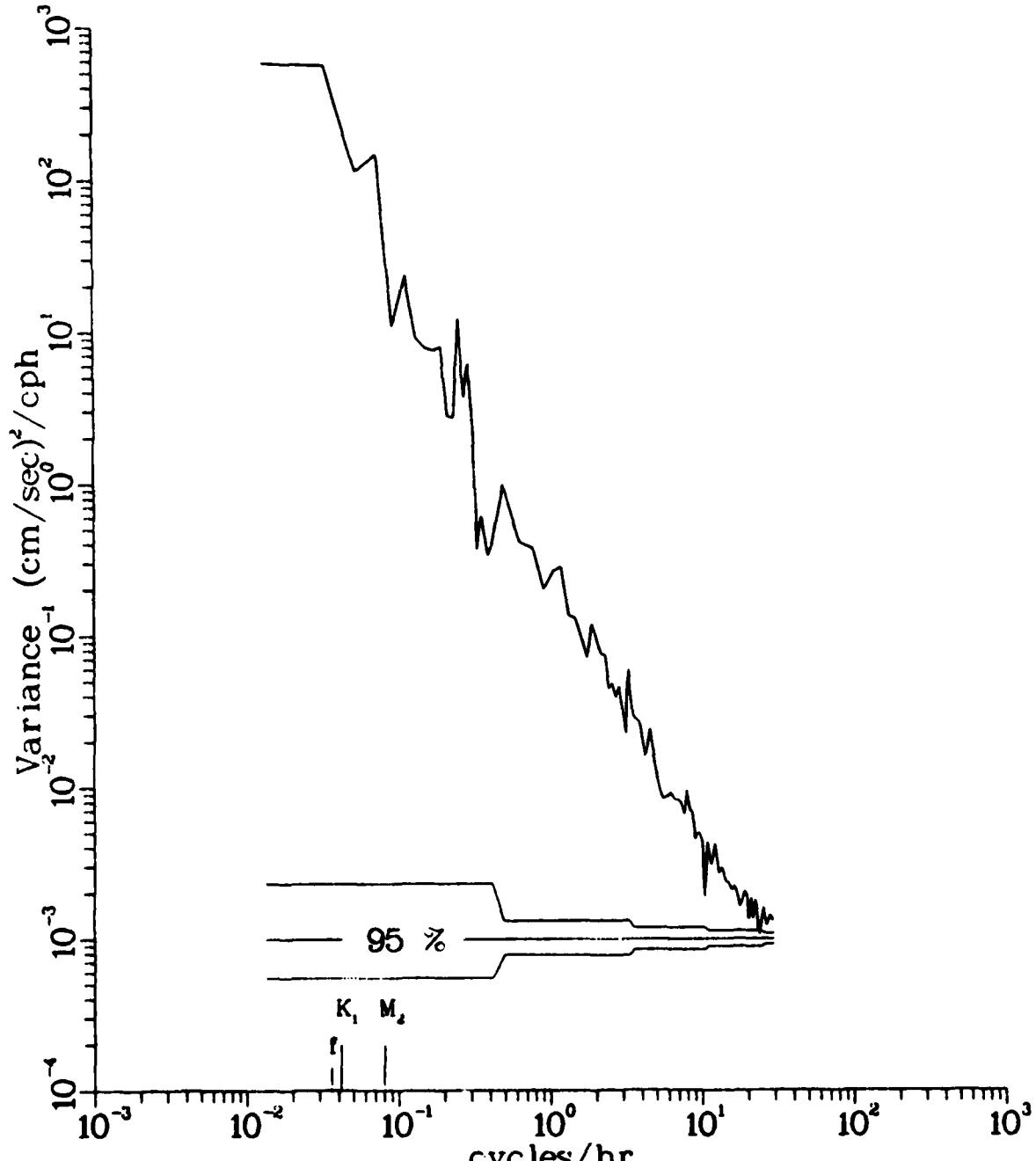


Variable : U
 File : ACM
 Meter : 780100
 Lat : 25.803555
 Long : -89.74165

Array : ATOM79
 Depth : 000137
 Start : 20 DEC 1979
 End : 26 DEC 1979

Figure 208.

CURRENT SPECTRUM

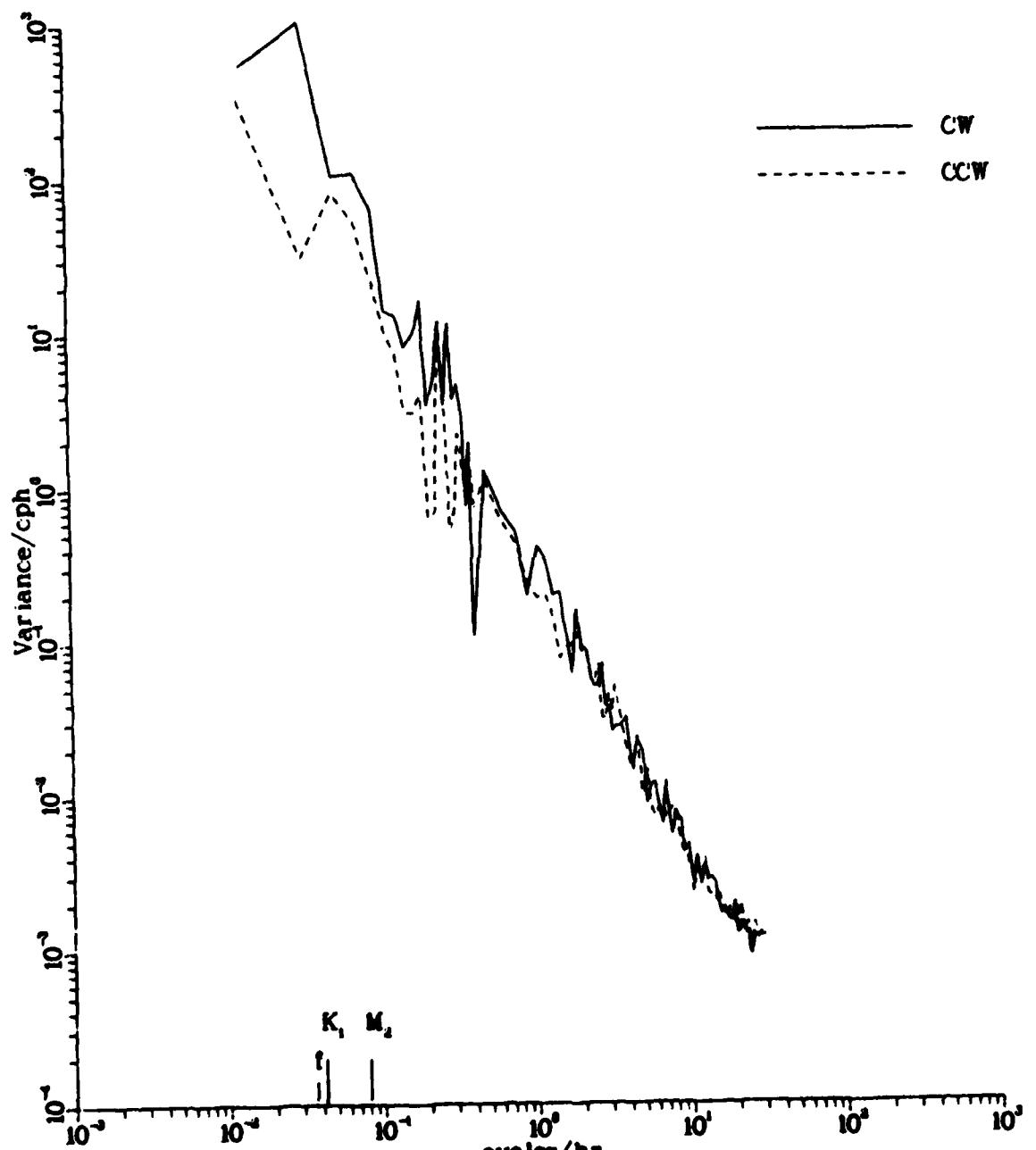


Variable V
File ACM
Meter 790100
Lat. 23.805555
Long -89.744165

Array ATOM79
Depth 000137
Start 20 DEC 1979
End 26 DEC 1979

Figure 209.

ROTARY SPECTRUM



Variable . U
 Depth . 000137
 Meter . 790100
 Lat . 25.805565
 Long . -89.714165

Variable . V
 Depth . 000137
 Meter . 790100
 Lat . 25.805565
 Long . -89.714165

Figure 210.

CURRENT SPECTRUM

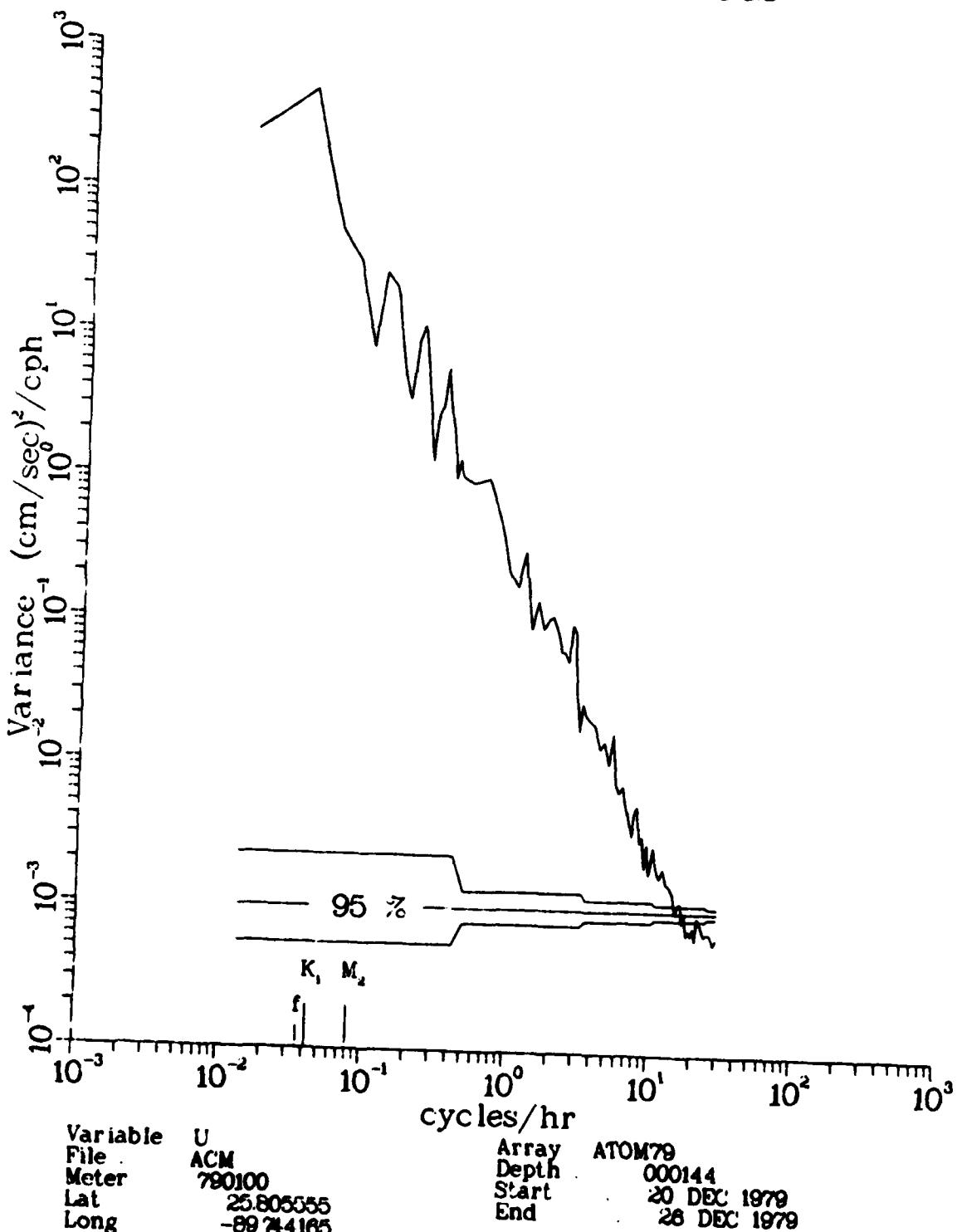


Figure 211.

CURRENT SPECTRUM

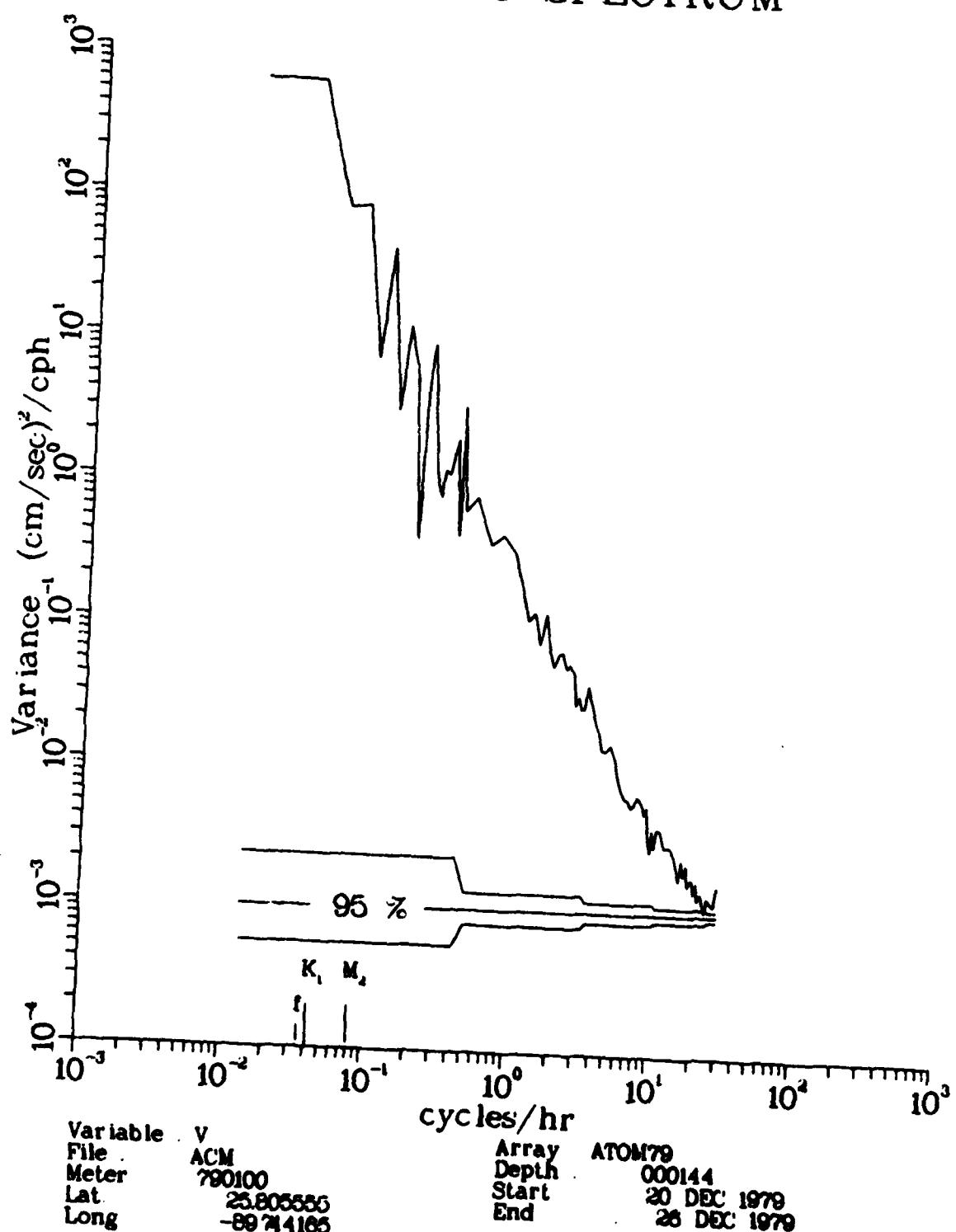
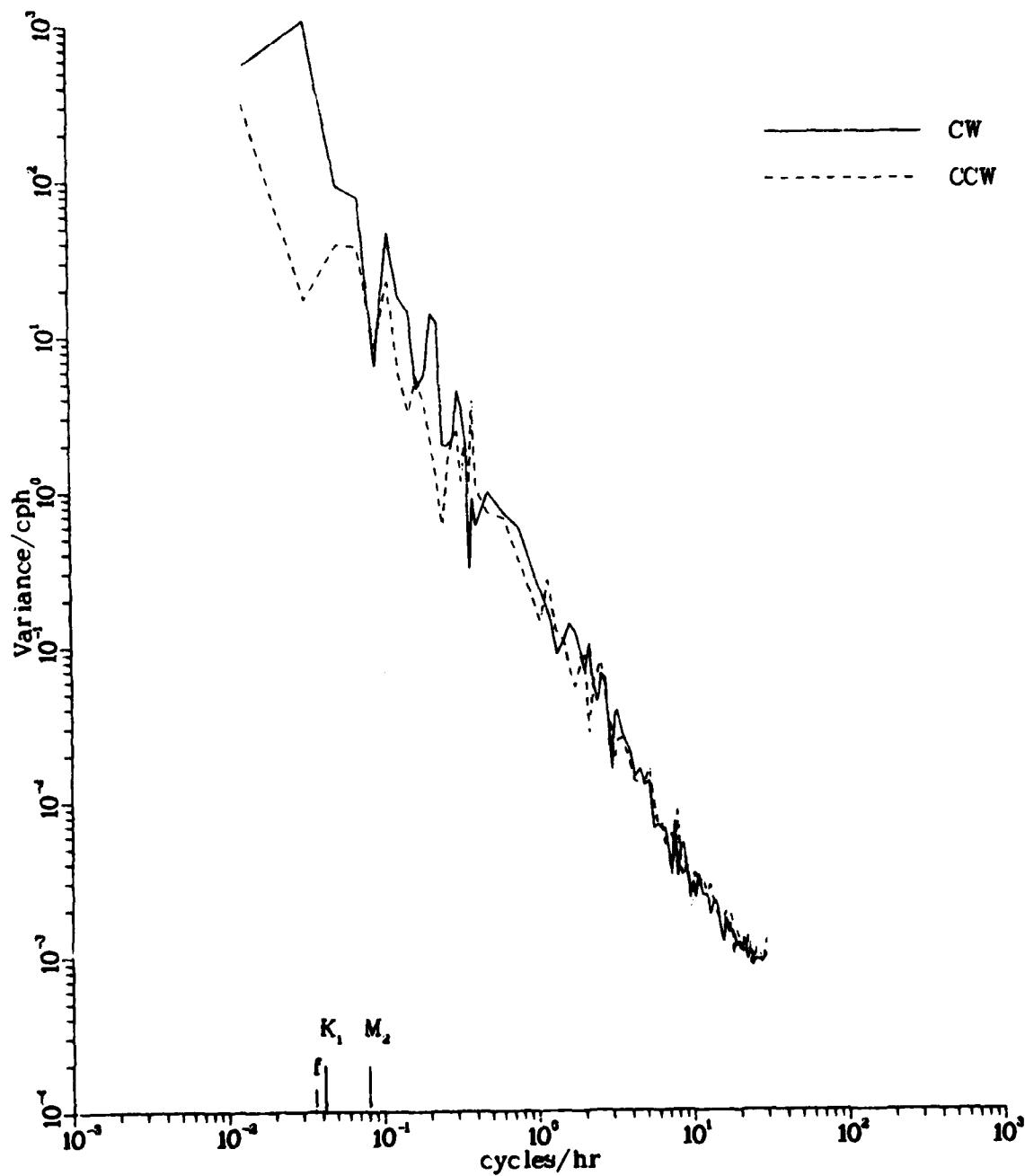


Figure 212.

ROTARY SPECTRUM

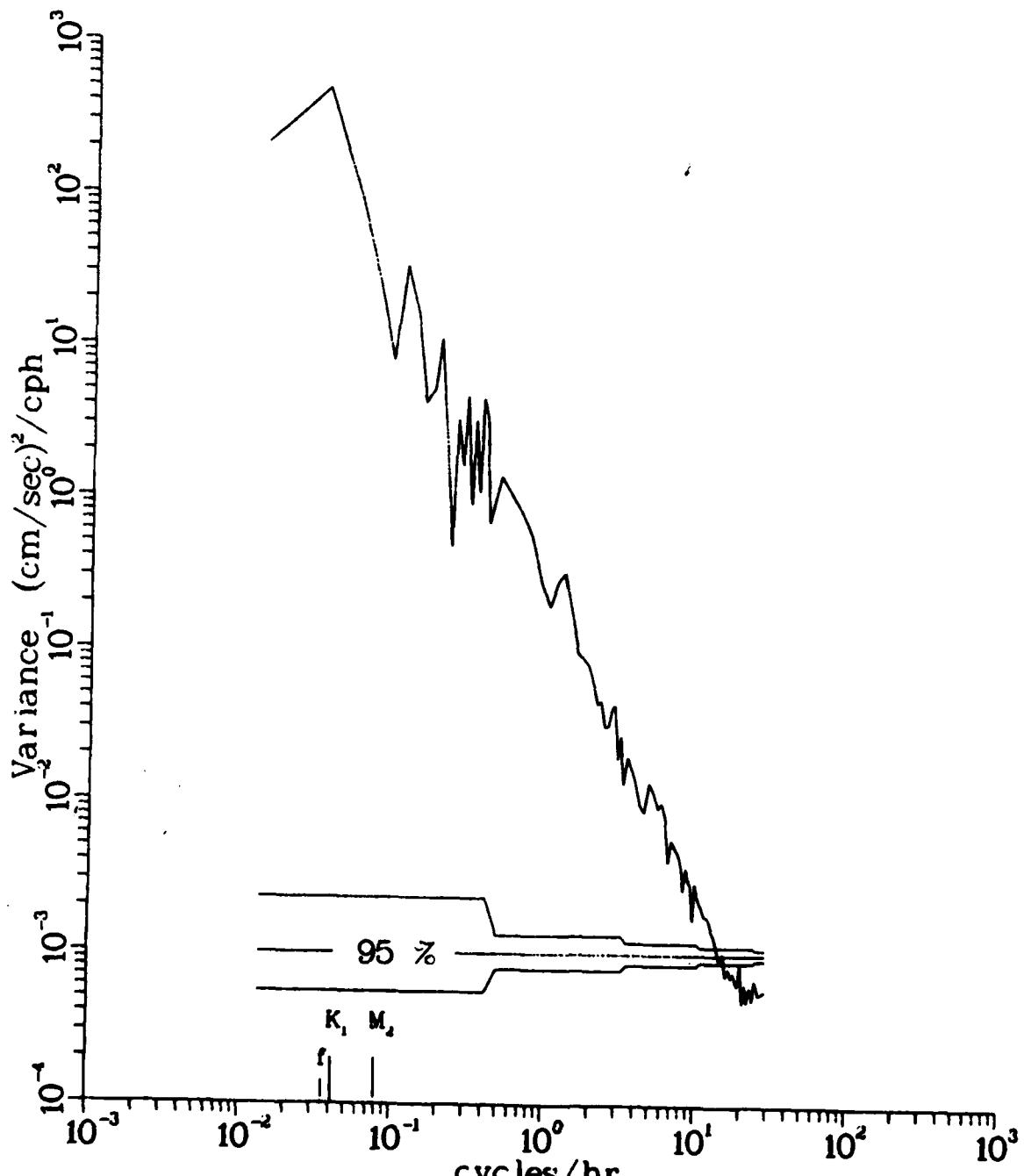


Variable . U
 Depth . 000144
 Meter . 790100
 Lat . 25.805555
 Long . -89.744165

Variable . V
 Depth . 000144
 Meter . 790100
 Lat . 25.805555
 Long . -89.744165

Figure 213.

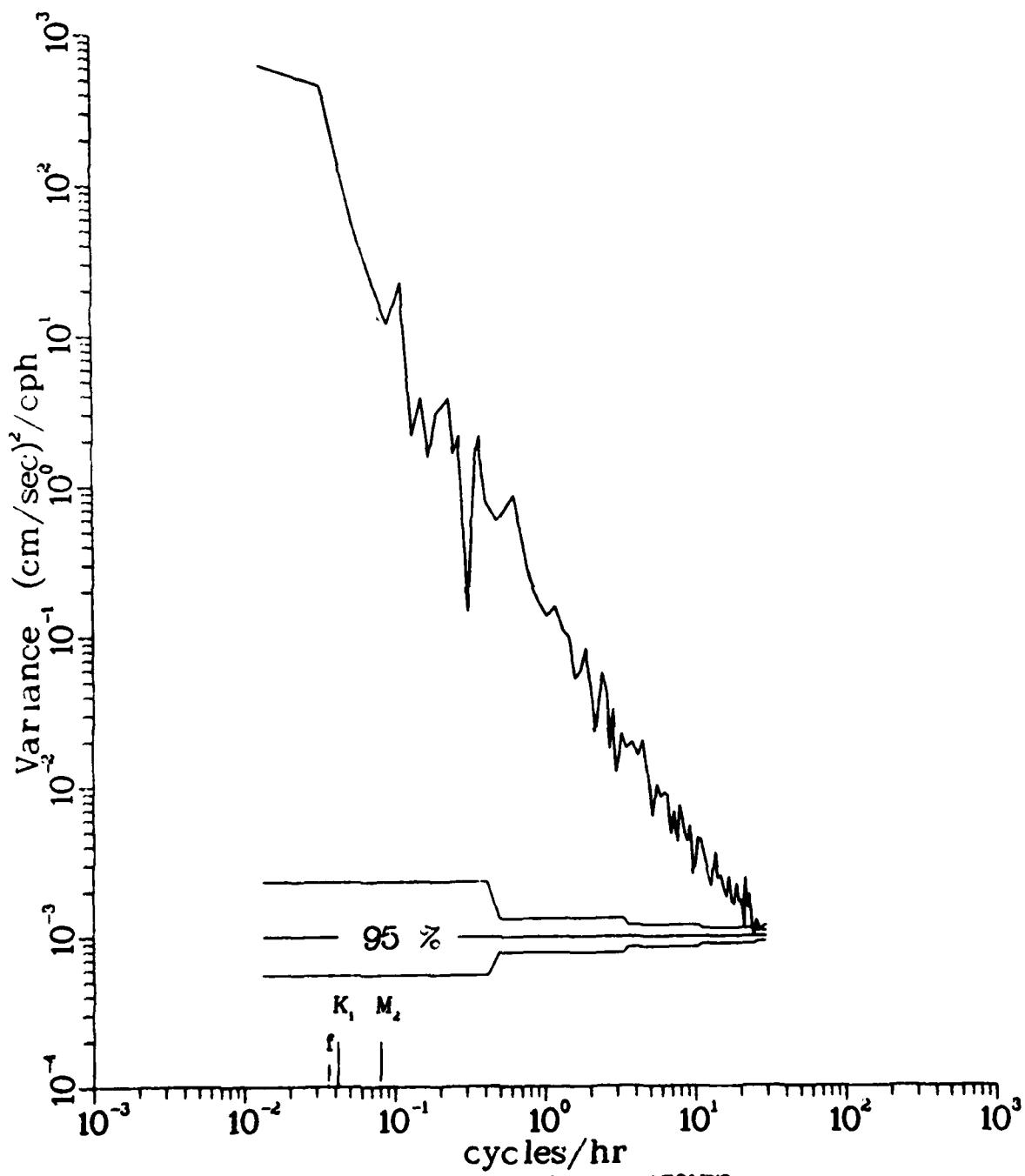
CURRENT SPECTRUM



Variable	U	Array	ATOM79
File	ACM	Depth	000151
Meter	780100	Start	20 DEC 1979
Lat.	25.805555	End	26 DEC 1979
Long	-89.714165		

Figure 214.

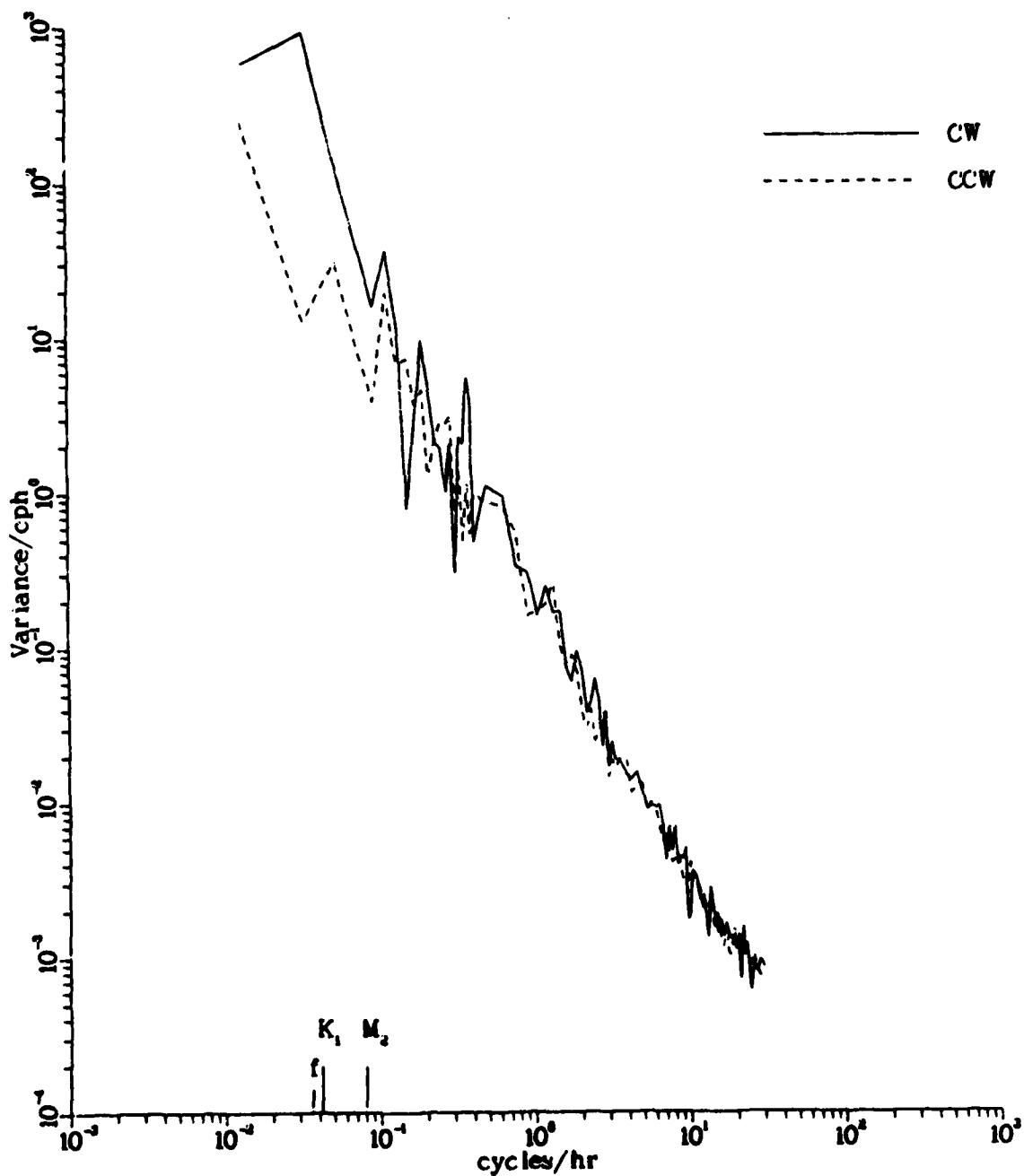
CURRENT SPECTRUM



Variable	V	Array	ATOM79
File	ACM	Depth	000151
Meter	790100	Start	20 DEC 1979
Lat.	25.805555	End	26 DEC 1979
Long	-89.24165		

Figure 215.

ROTARY SPECTRUM

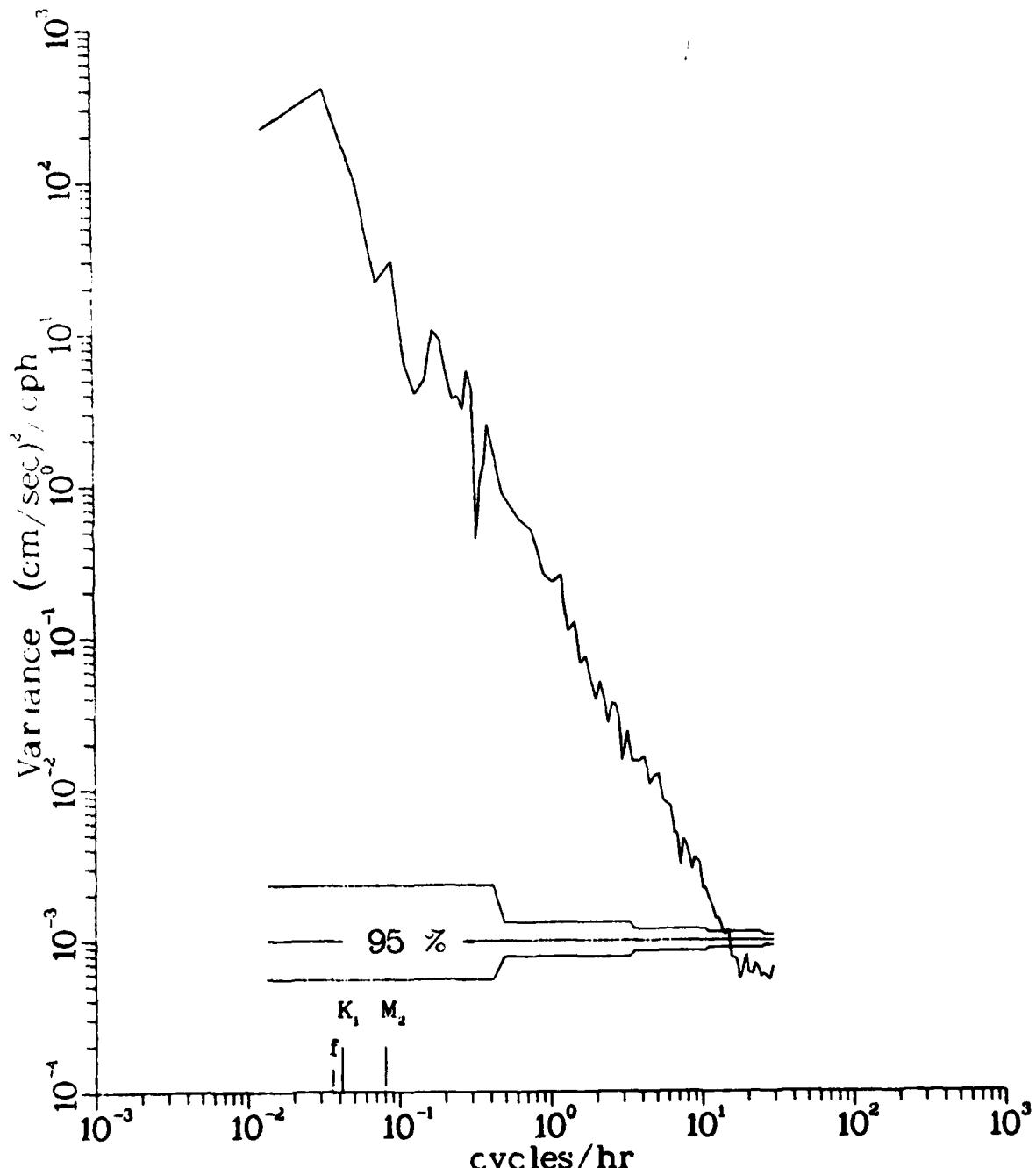


Variable . U
 Depth . 000151
 Meter . 790100
 Lat . 25.805555
 Long . -89.74165

Variable . V
 Depth . 000151
 Meter . 790100
 Lat . 25.805555
 Long . -89.74165

Figure 216.

CURRENT SPECTRUM



Variable	U	Array	ATOM79
File	ACM	Depth	000158
Meter	790100	Start	20 DEC 1979
Lat.	25.805555	End	26 DEC 1979
Long	-89.744165		

Figure 217.

CURRENT SPECTRUM

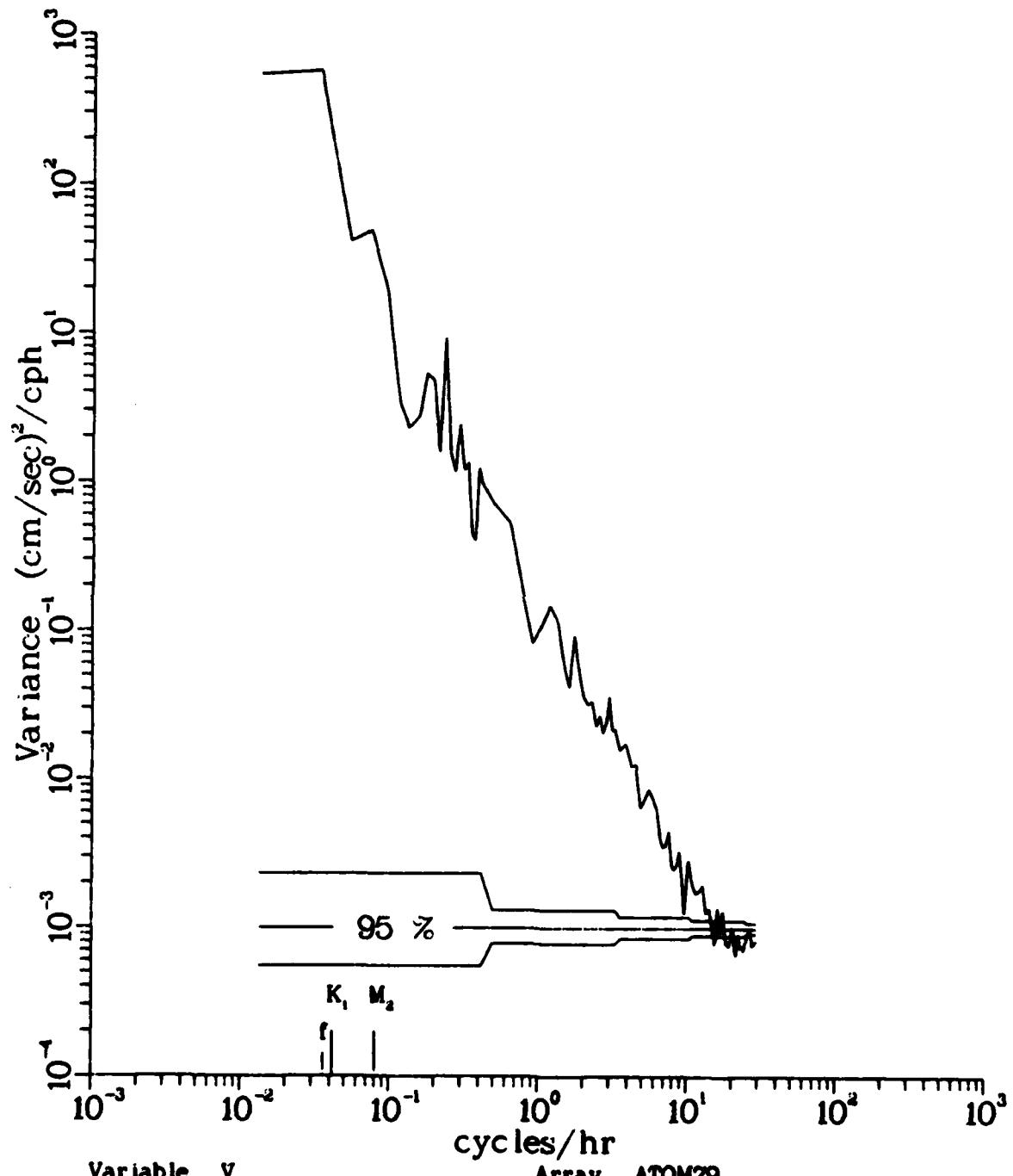
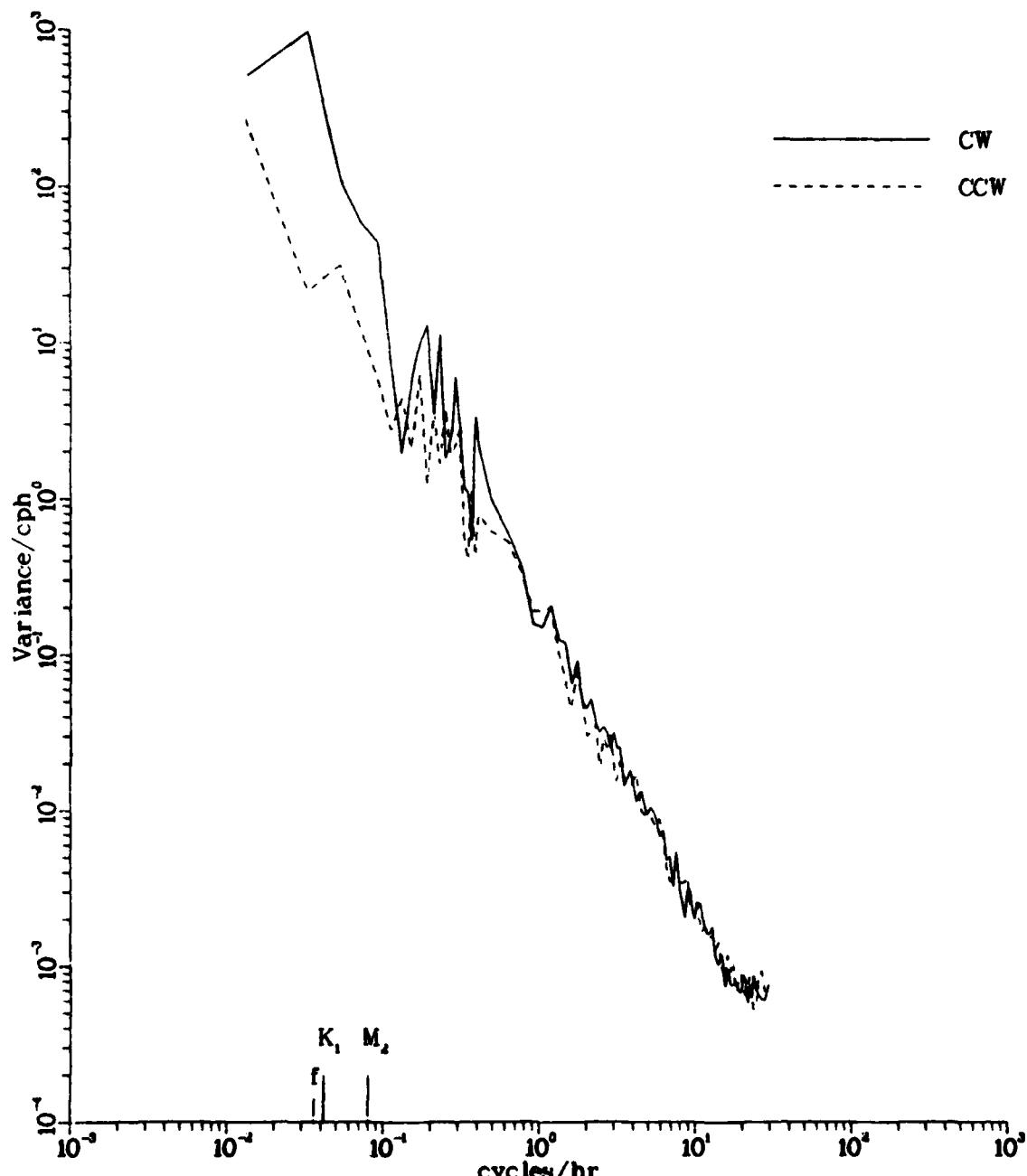


Figure 218.

ROTARY SPECTRUM

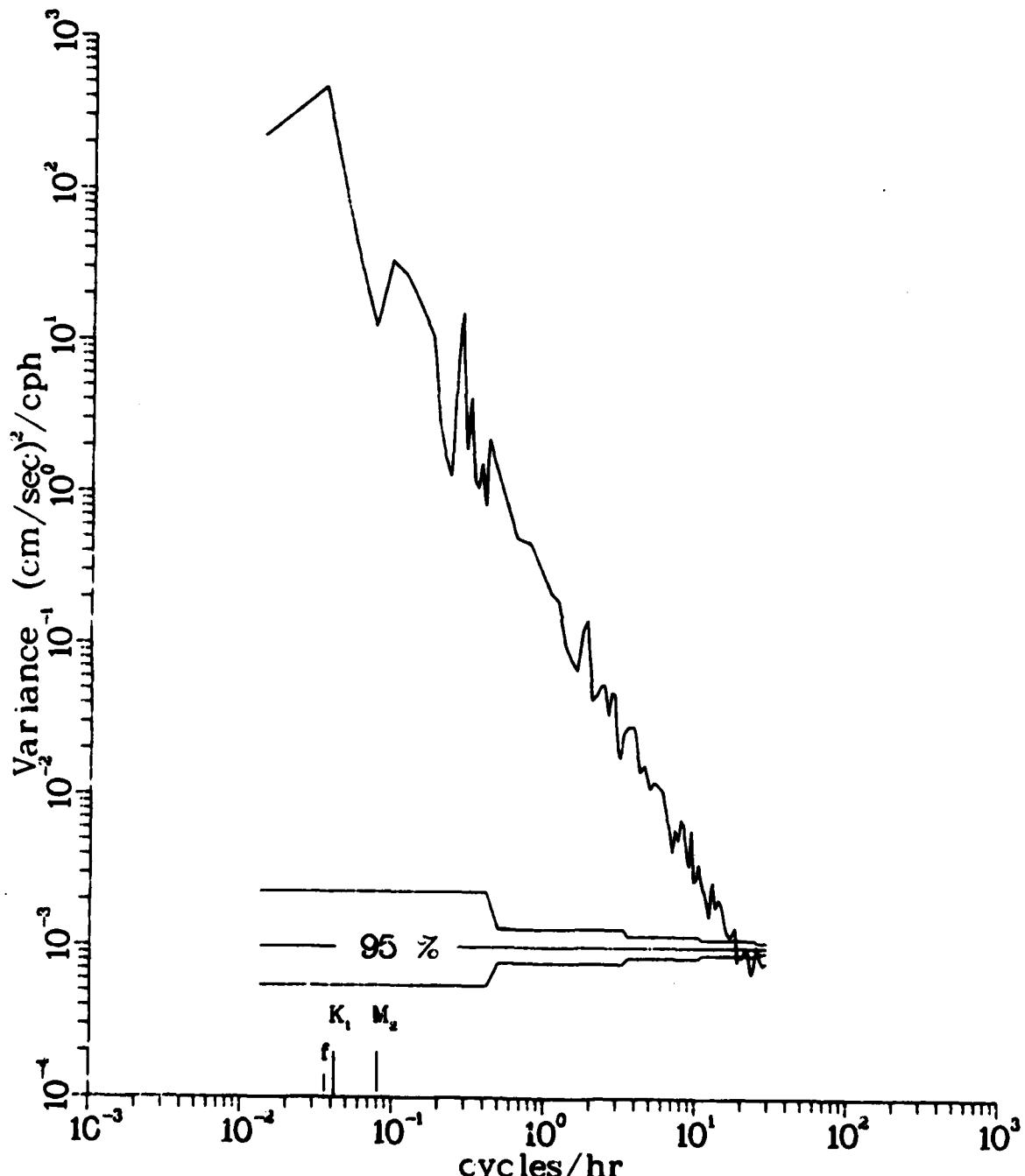


Variable . U
 Depth : 000158
 Meter : 790100
 Lat. : 25.805555
 Long : -89°41'16.5"

Variable . V
 Depth : 000158
 Meter : 790100
 Lat. : 25.805555
 Long : -89°41'16.5"

Figure 219.

CURRENT SPECTRUM

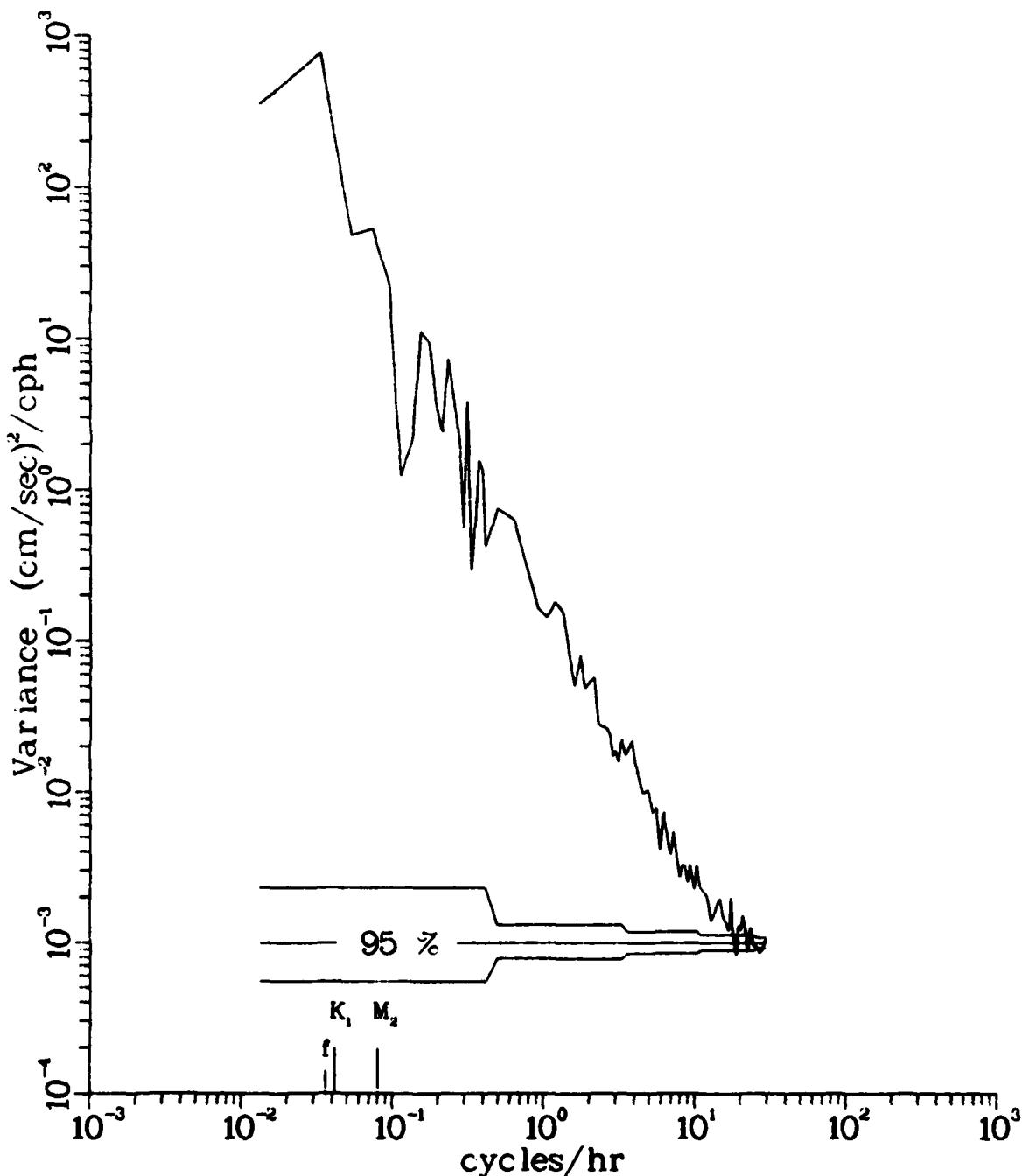


Variable U
 File ACM
 Meter 790100
 Lat 25.805555
 Long -89.744165

Array ATOM79
 Depth 000165
 Start 20 DEC 1979
 End 26 DEC 1979

Figure 220.

CURRENT SPECTRUM



Variable V

File ACM

Meter 780100

Lat 25.805555

Long -89.744165

Array ATOM79

Depth 000165

Start 20 DEC 1979

End 26 DEC 1979

Figure 221.

ROTARY SPECTRUM

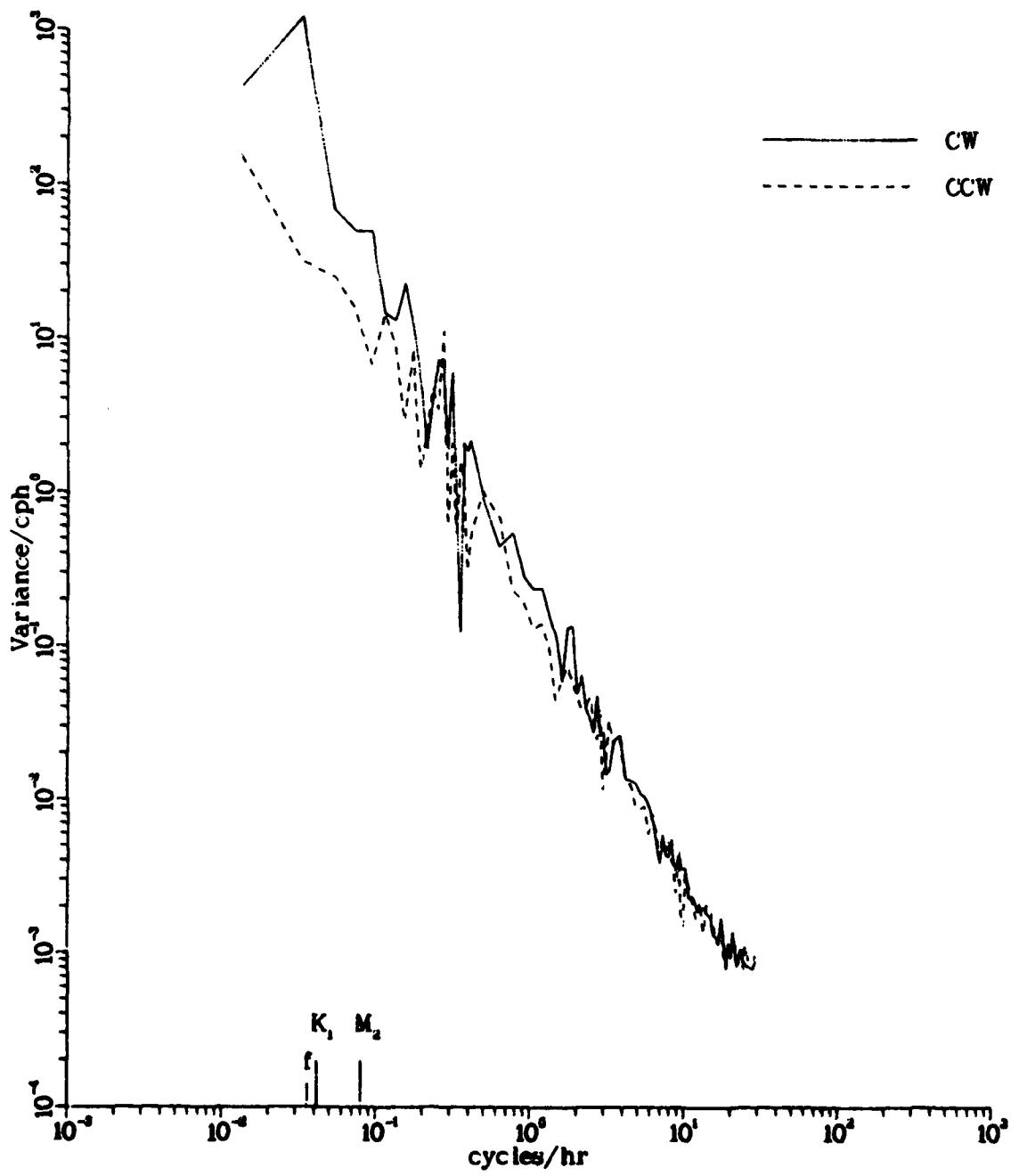
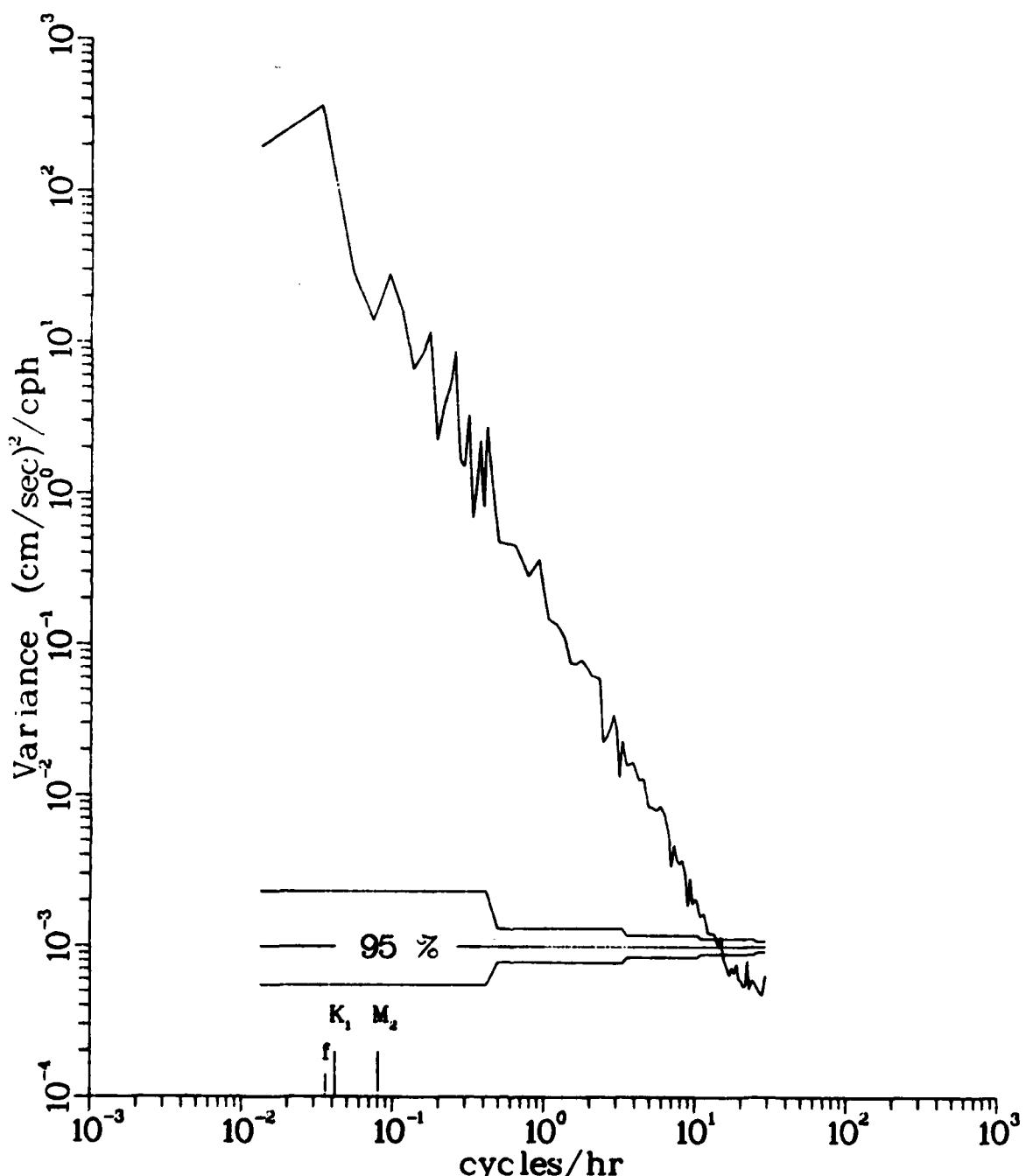


Figure 222.

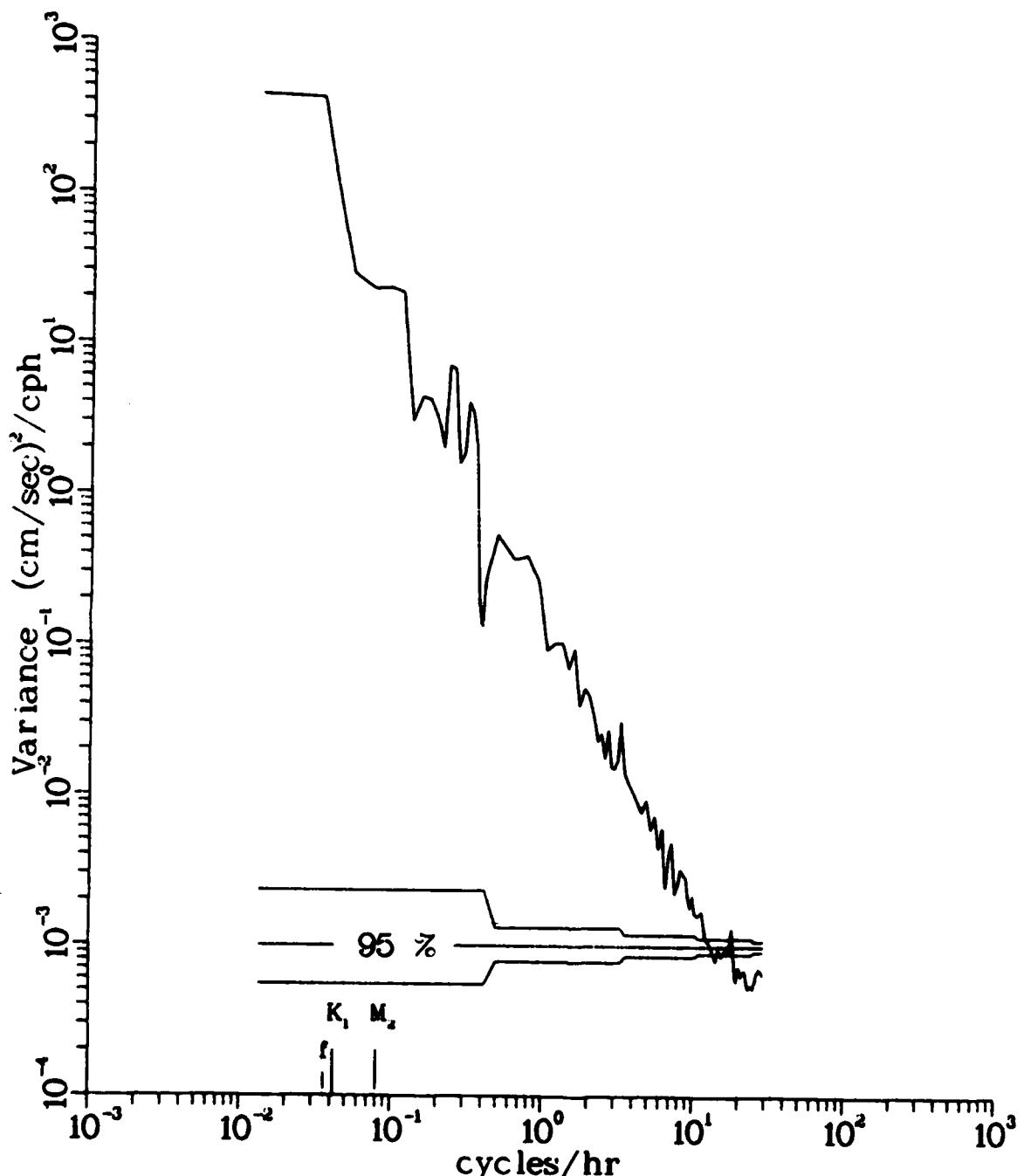
CURRENT SPECTRUM



Variable : U	Array : ATOM79
File : ACM	Depth : 000172
Meter : 780100	Start : 20 DEC 1979
Lat. : 25.805555	End : 26 DEC 1979
Long : -89.744165	

Figure 223.

CURRENT SPECTRUM

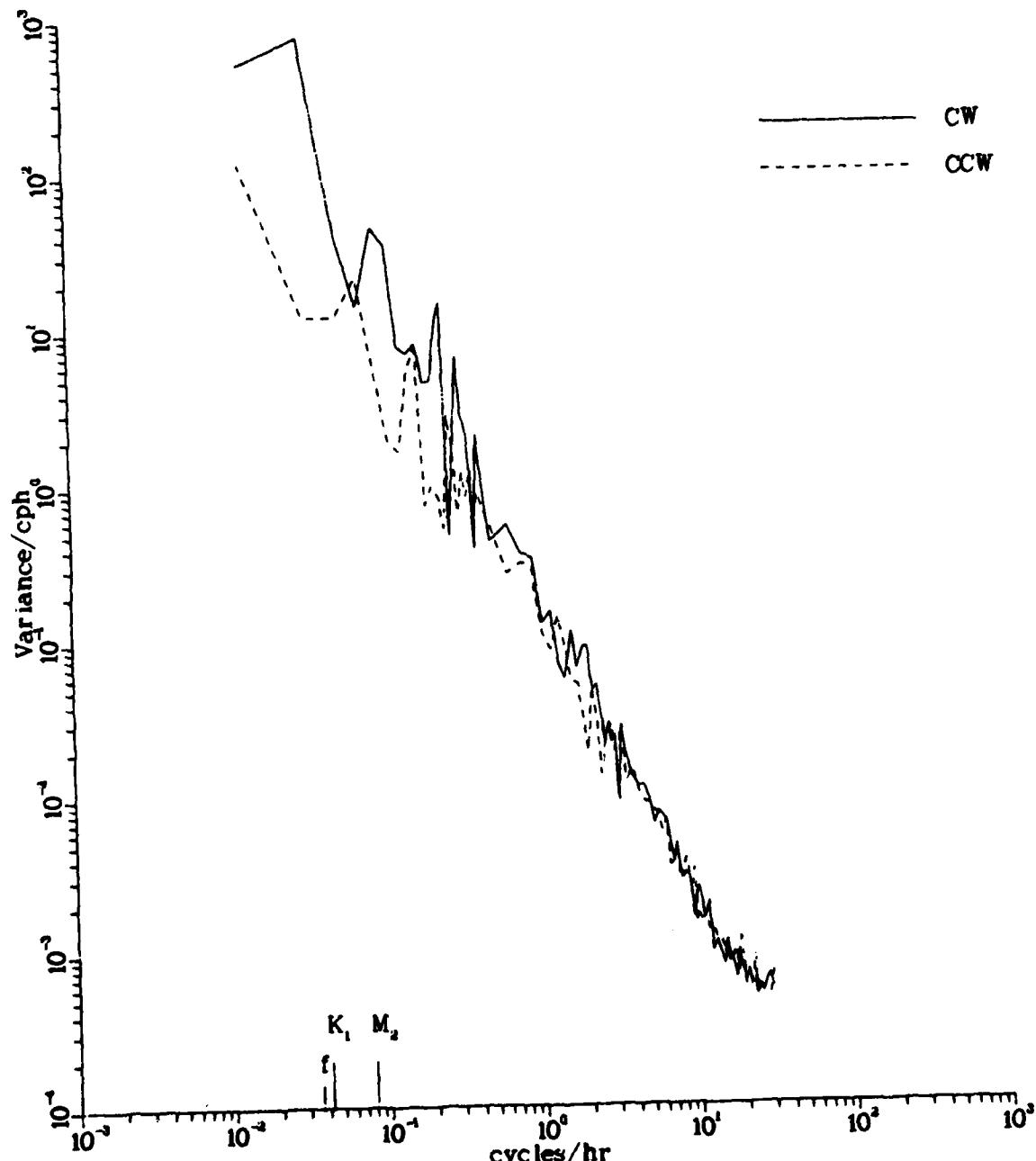


Variable : V
 File : ACM
 Meter : 780100
 Lat. : 25.805555
 Long : -89.74165

Array : ATOM79
 Depth : 000172
 Start : 20 DEC 1979
 End : 28 DEC 1979

Figure 224.

ROTARY SPECTRUM

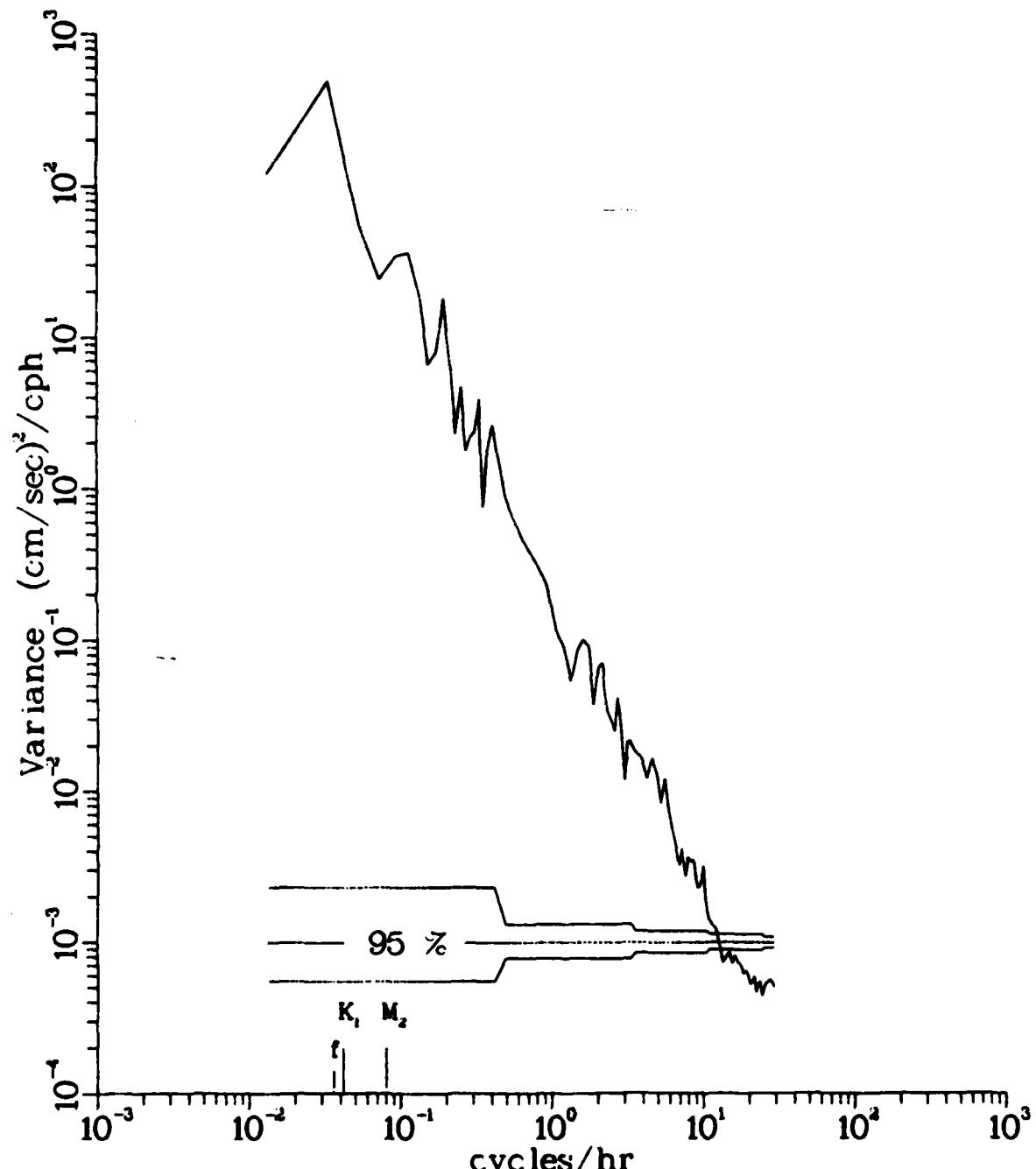


Variable U
 Depth 000172
 Meter 790100
 Lat 25.805555
 Long -89 24 165

Variable V
 Depth 000172
 Meter 790100
 Lat 25.805555
 Long -89 24 165

Figure 225.

CURRENT SPECTRUM

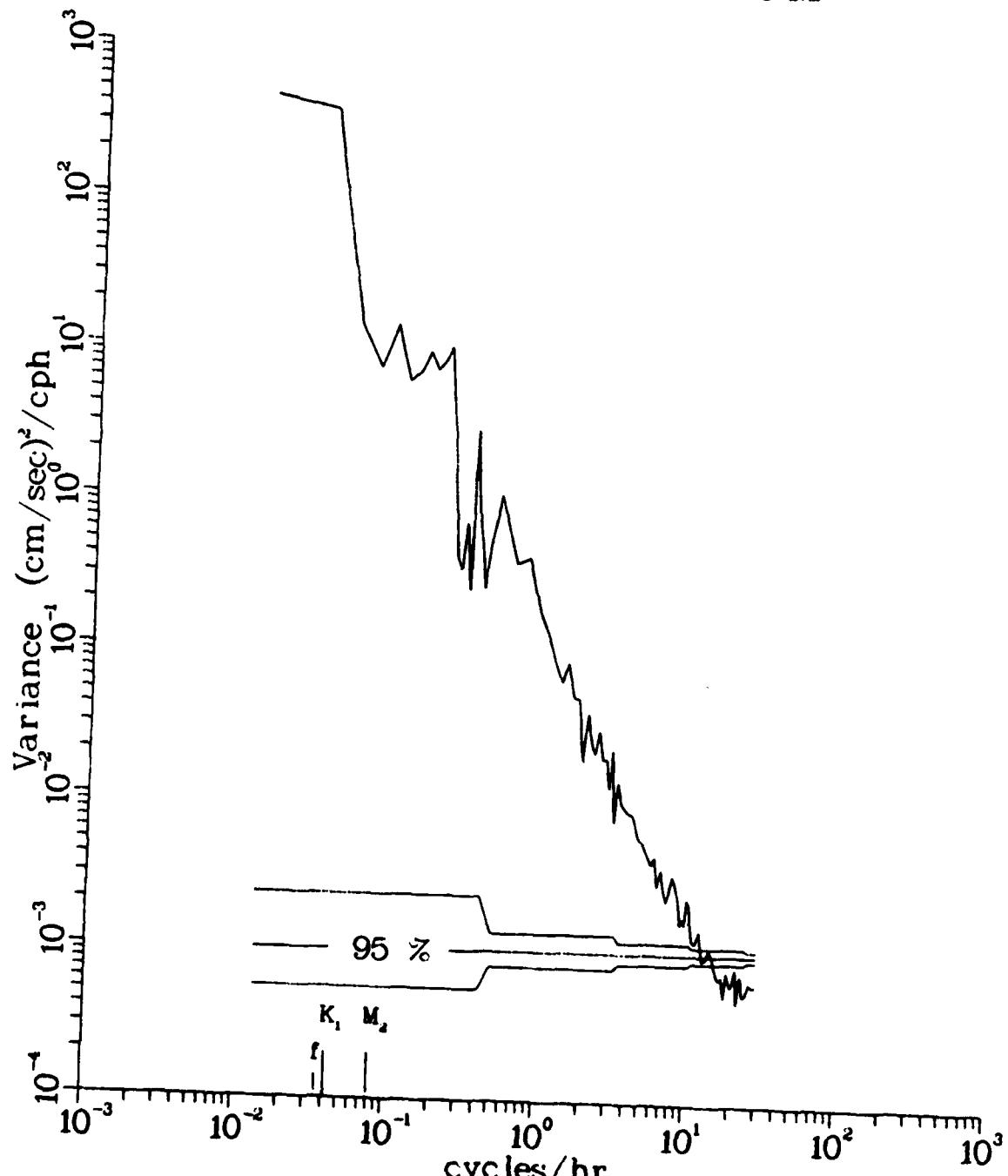


Variable : U
 File : ACM
 Meter : 790100
 Lat. : 25.805555
 Long : -89.744165

Array : ATOM79
 Depth : 000ft
 Start : 20 DEC 1979
 End : 26 DEC 1979

Figure 226.

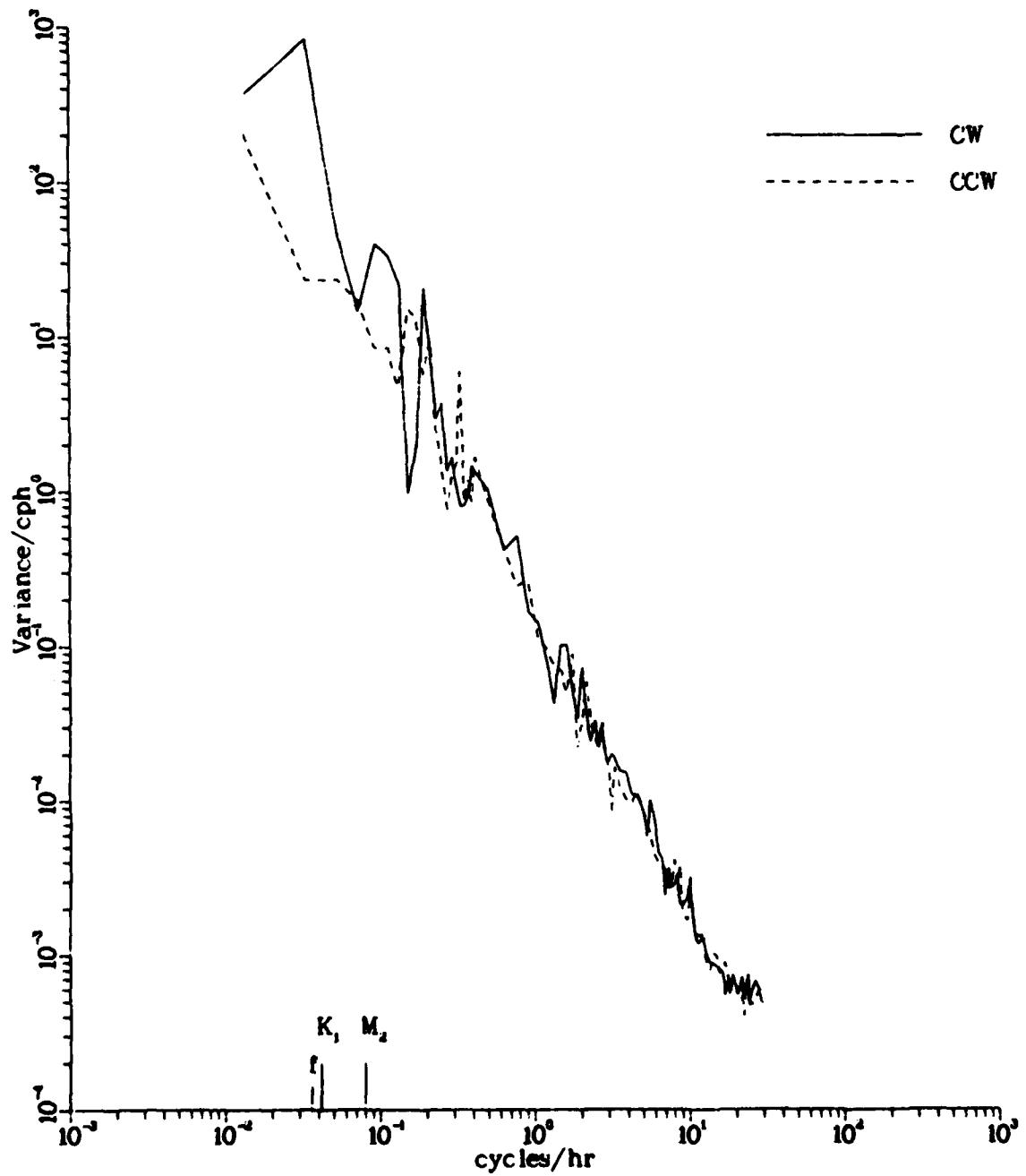
CURRENT SPECTRUM



Variable : V
 File : ACM
 Meter : 790100
 Lat. : 25.805555
 Long. : -89.24165
 Array : ATOM79
 Depth : 000m
 Start : 20 DEC 1979
 End : 26 DEC 1979

Figure 227.

ROTARY SPECTRUM

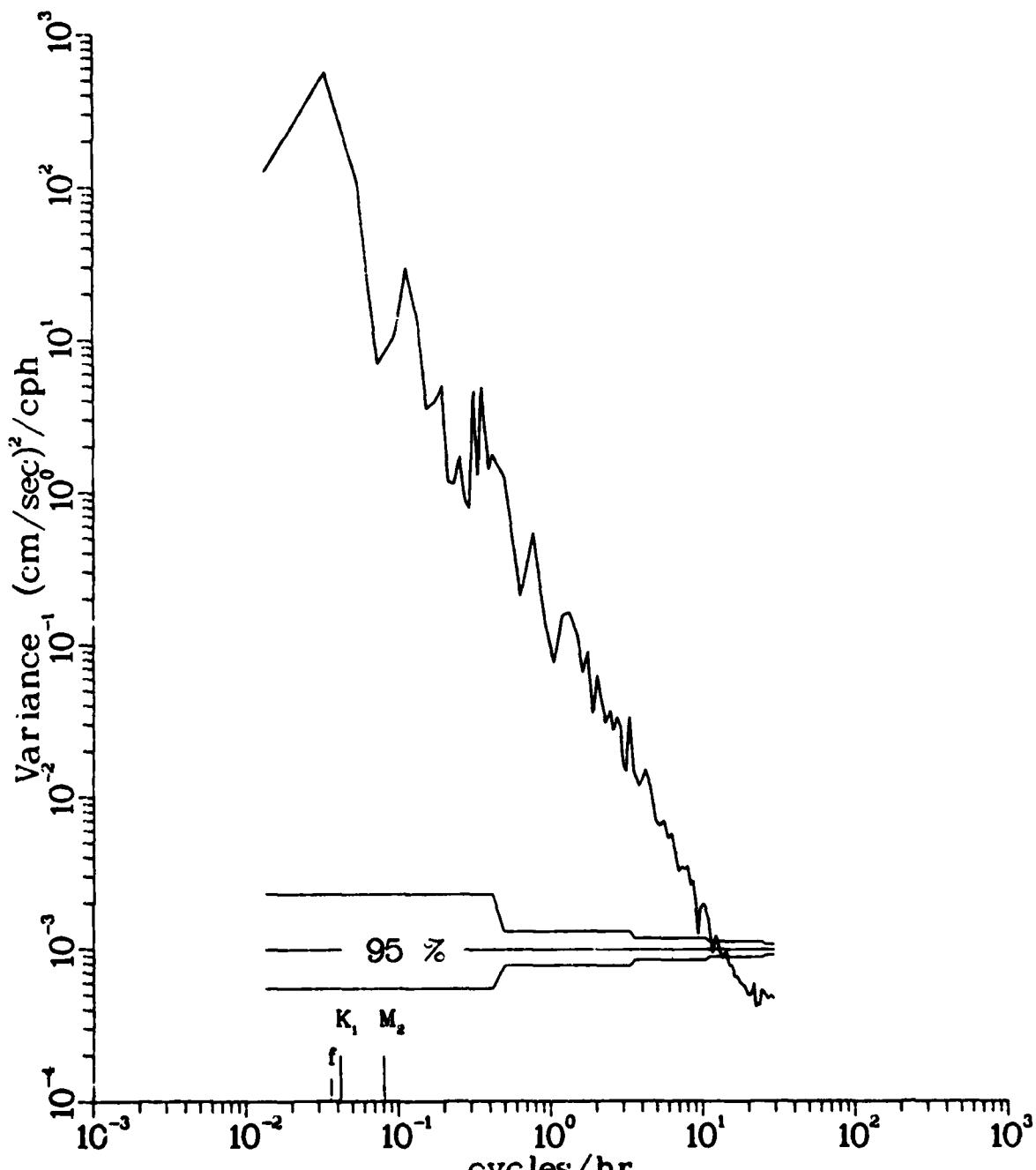


Variable . U
 Depth : 000179
 Meter 790100
 Lat. 25.805555
 Long -89.714185

Variable . V
 Depth : 000179
 Meter 790100
 Lat. 25.805555
 Long -89.714185

Figure 228.

CURRENT SPECTRUM



Variable : U
 File : ACM
 Meter : 780100
 Lat. : 25.805555
 Long : -89.74465

Array : ATOM79
 Depth : 000186
 Start : 20 DEC 1979
 End : 26 DEC 1979

Figure 229.

CURRENT SPECTRUM

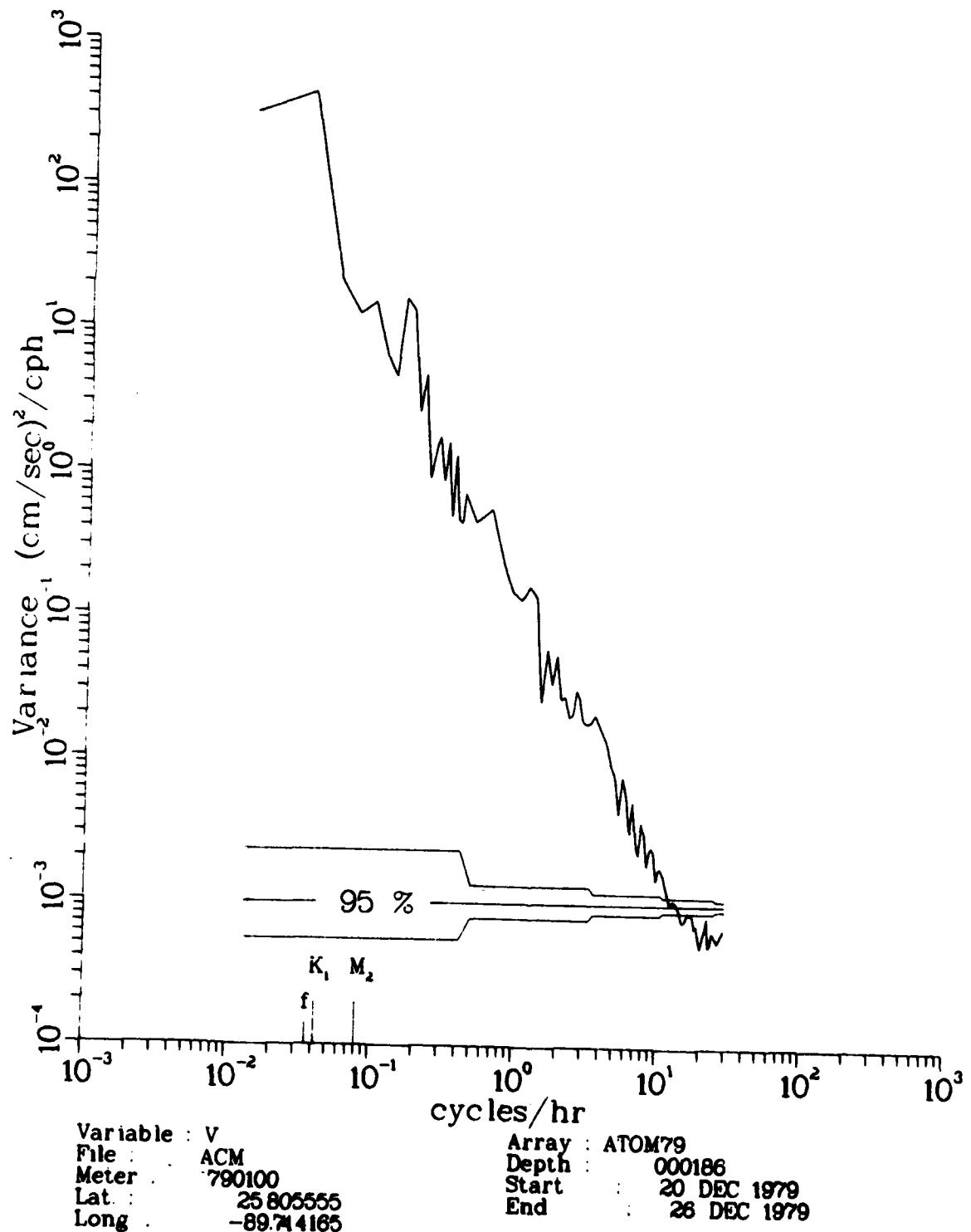
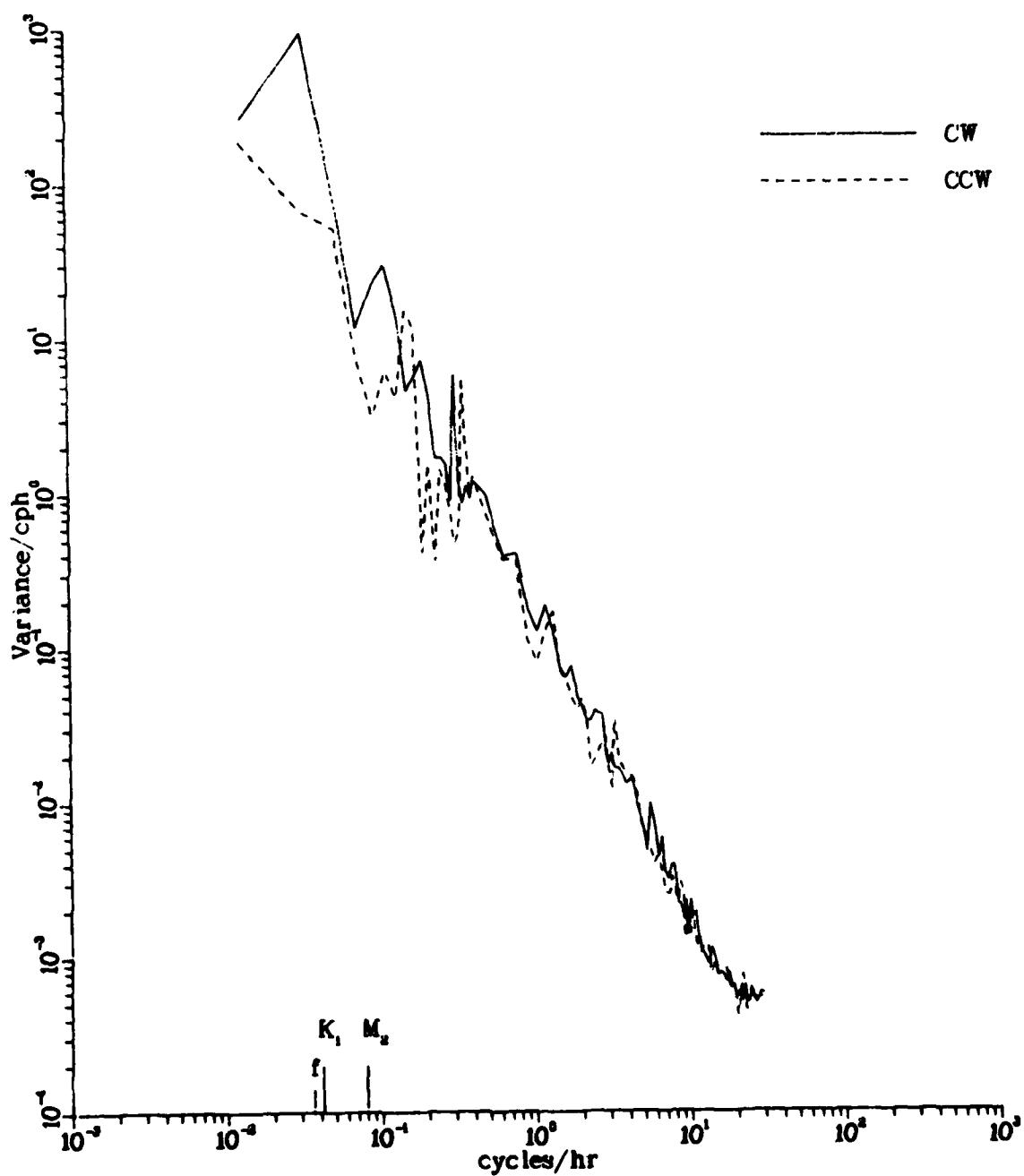


Figure 230.

ROTARY SPECTRUM

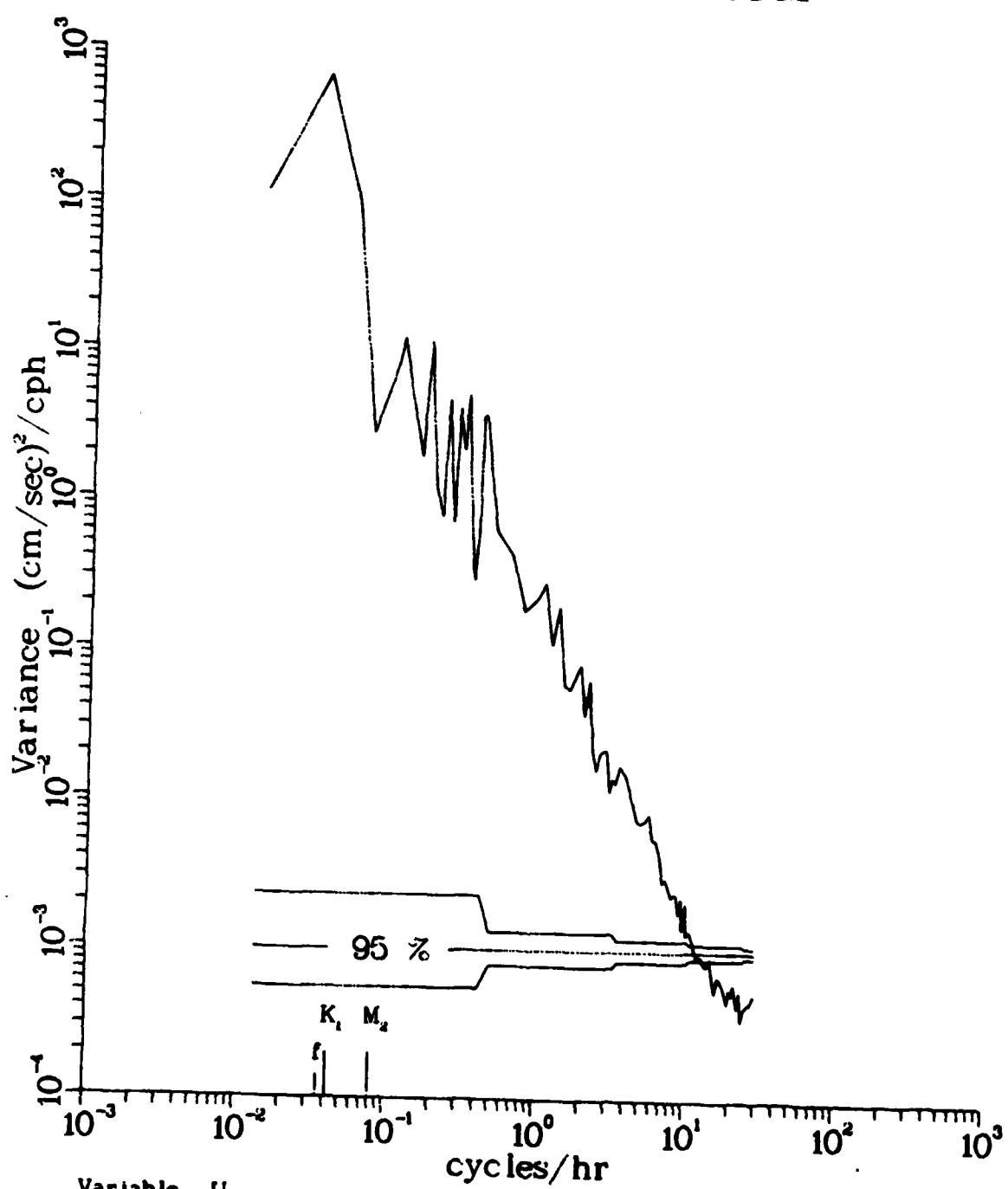


Variable : U
 Depth : 000186
 Meter : 790100
 Lat. : 25.805555
 Long : -89.714165

Variable : V
 Depth : 000186
 Meter : 790100
 Lat. : 25.805555
 Long : -89.714165

Figure 231.

CURRENT SPECTRUM



Variable U
File ACM
Meter 780100
Lat 25.803555
Long -89.214105

Array ATOM79
Depth 000193
Start 20 DEC 1979
End 26 DEC 1979

Figure 232.

CURRENT SPECTRUM

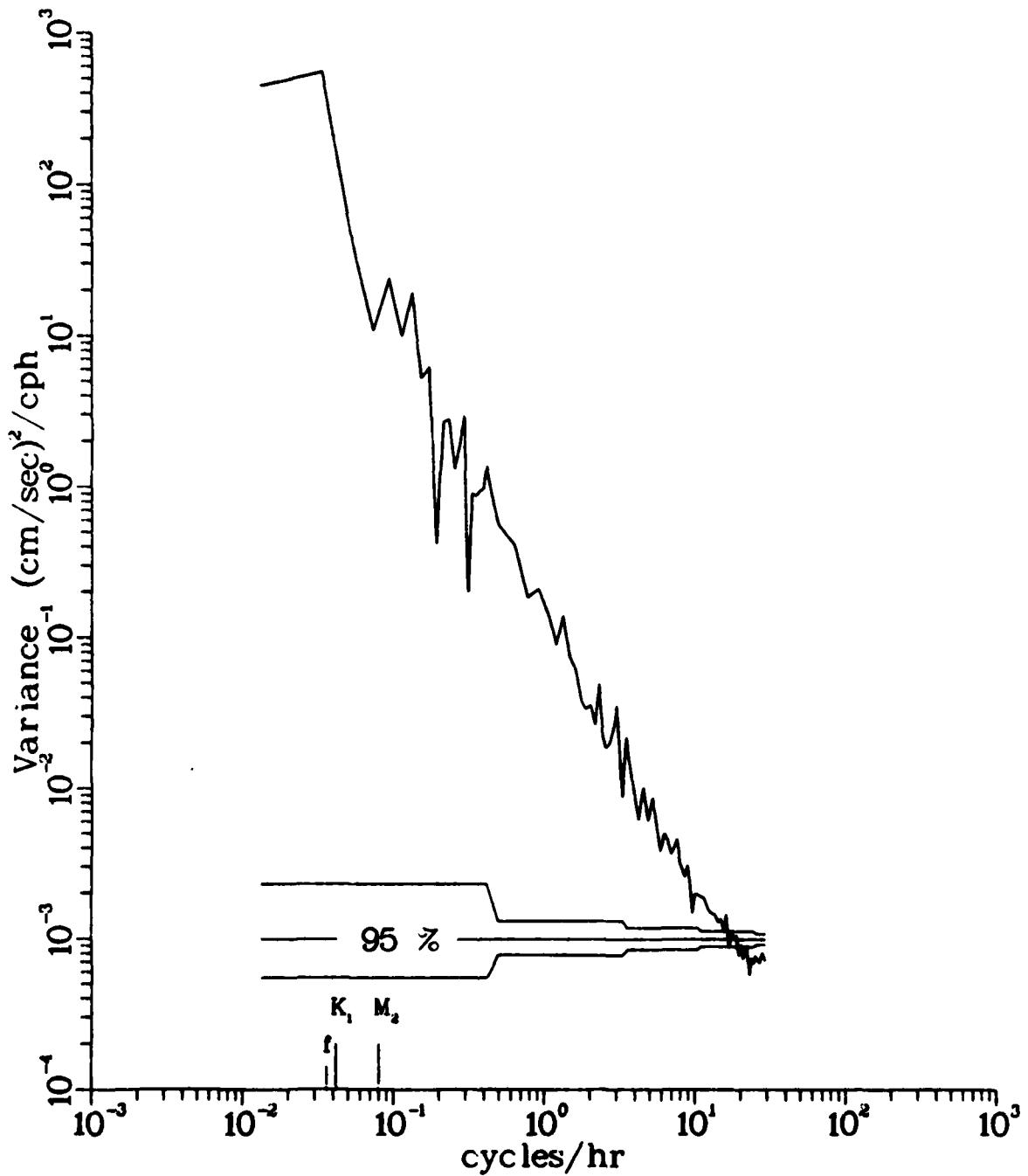
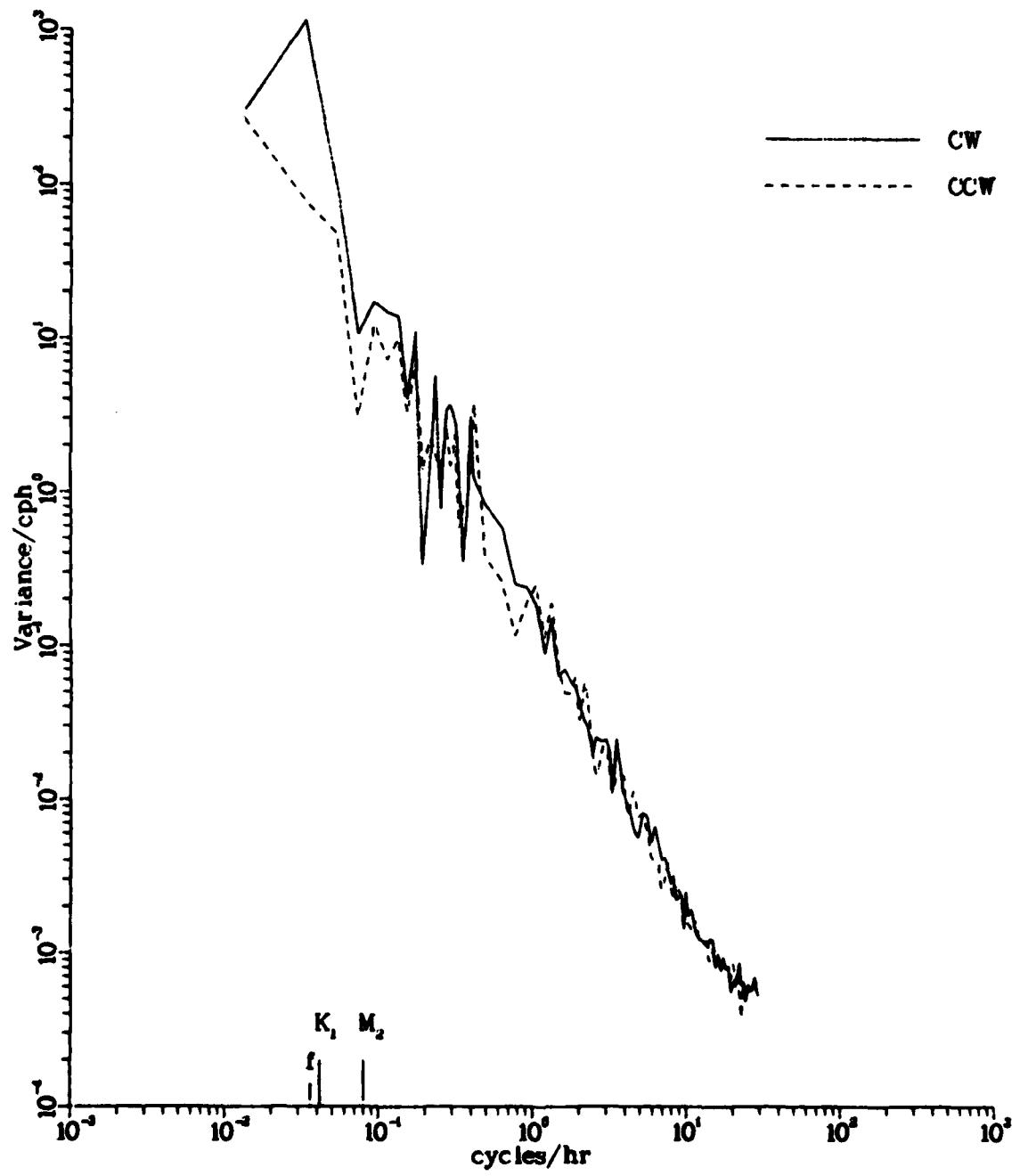


Figure 233.

ROTARY SPECTRUM



Variable . U
 Depth . 000193
 Meter . 790100
 Lat. . 25.805555
 Long . -89.714165

Variable . V
 Depth . 000193
 Meter . 790100
 Lat. . 25.805555
 Long . -89.714165

Figure 234.

CURRENT SPECTRUM

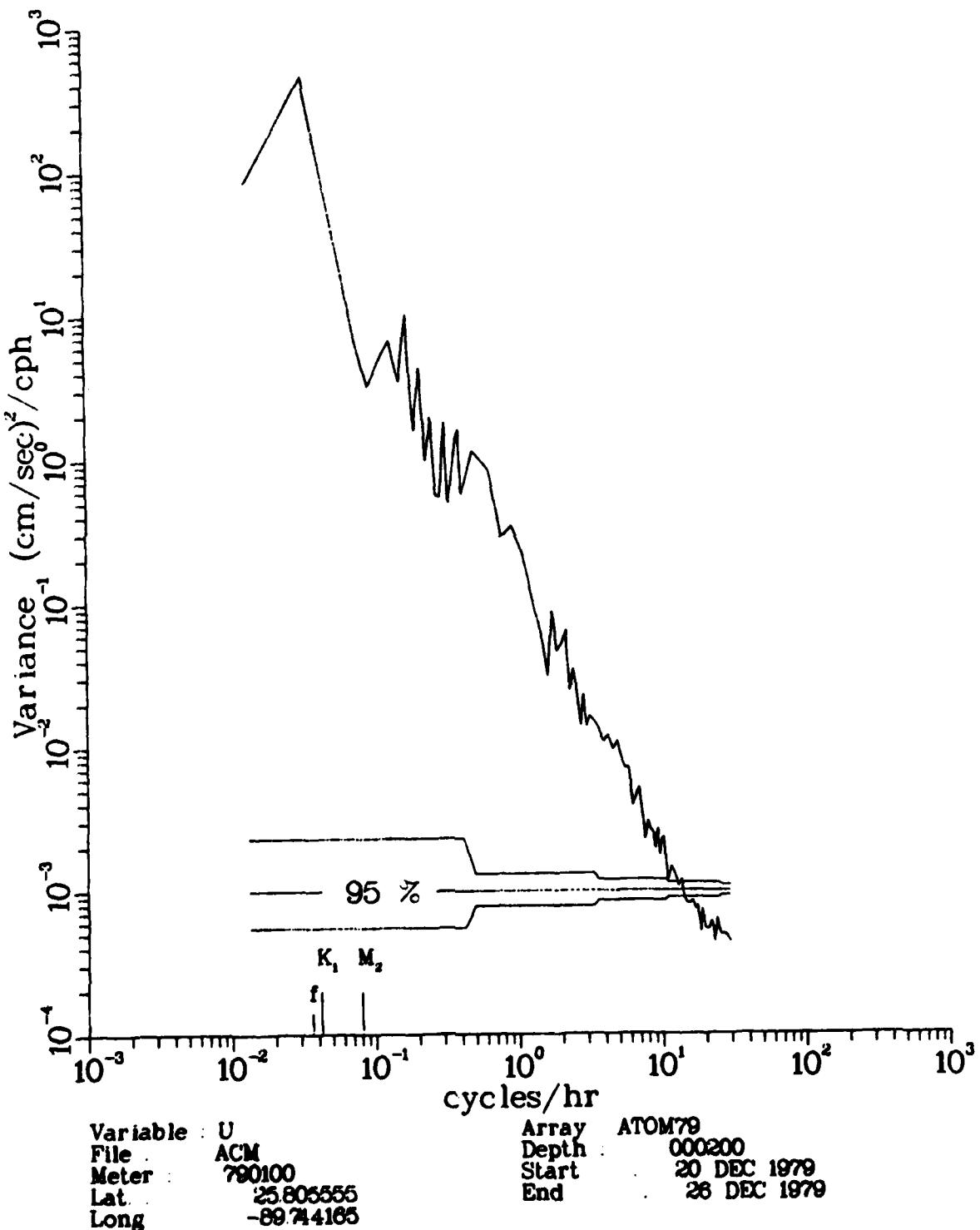


Figure 235.

CURRENT SPECTRUM

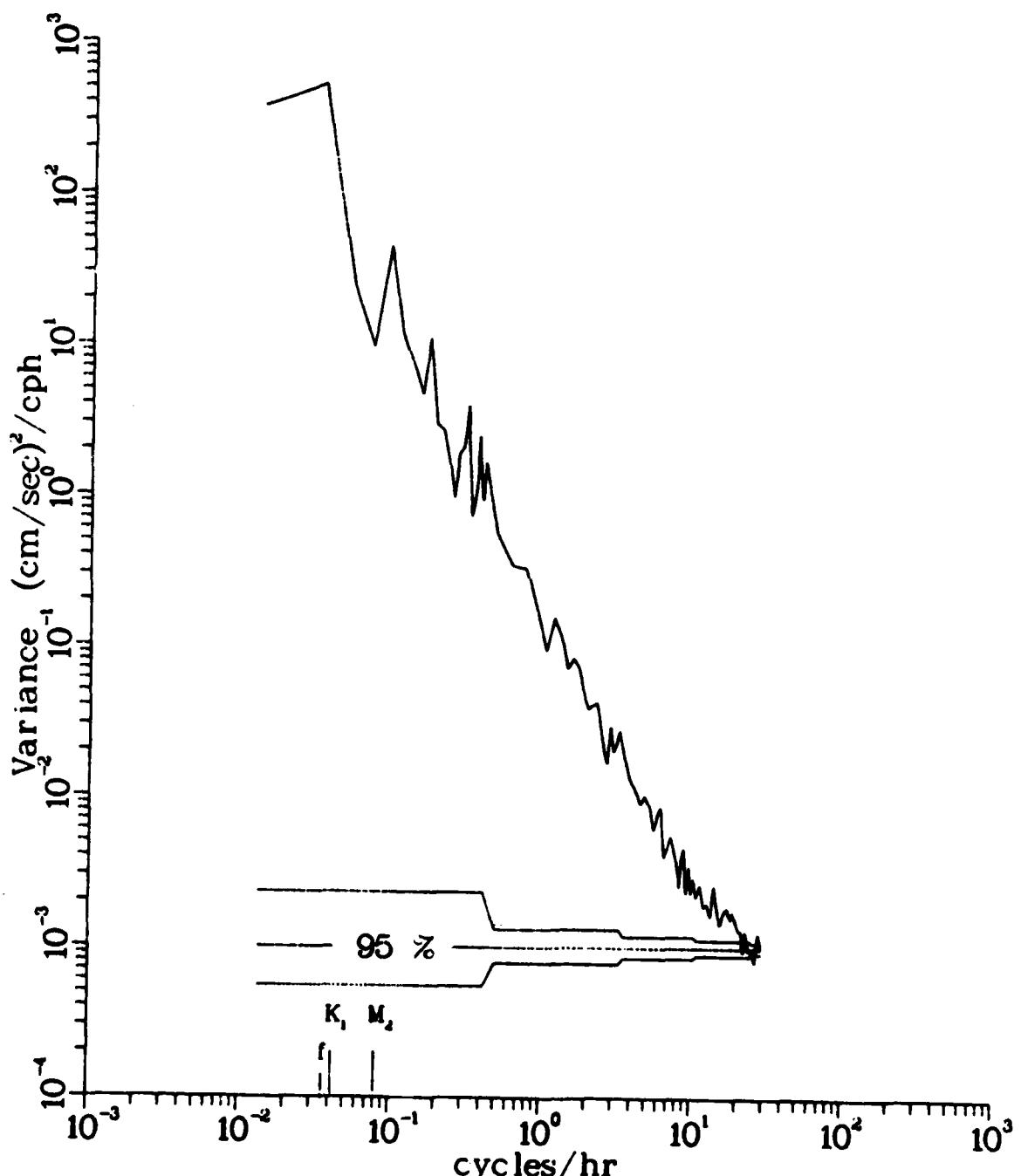
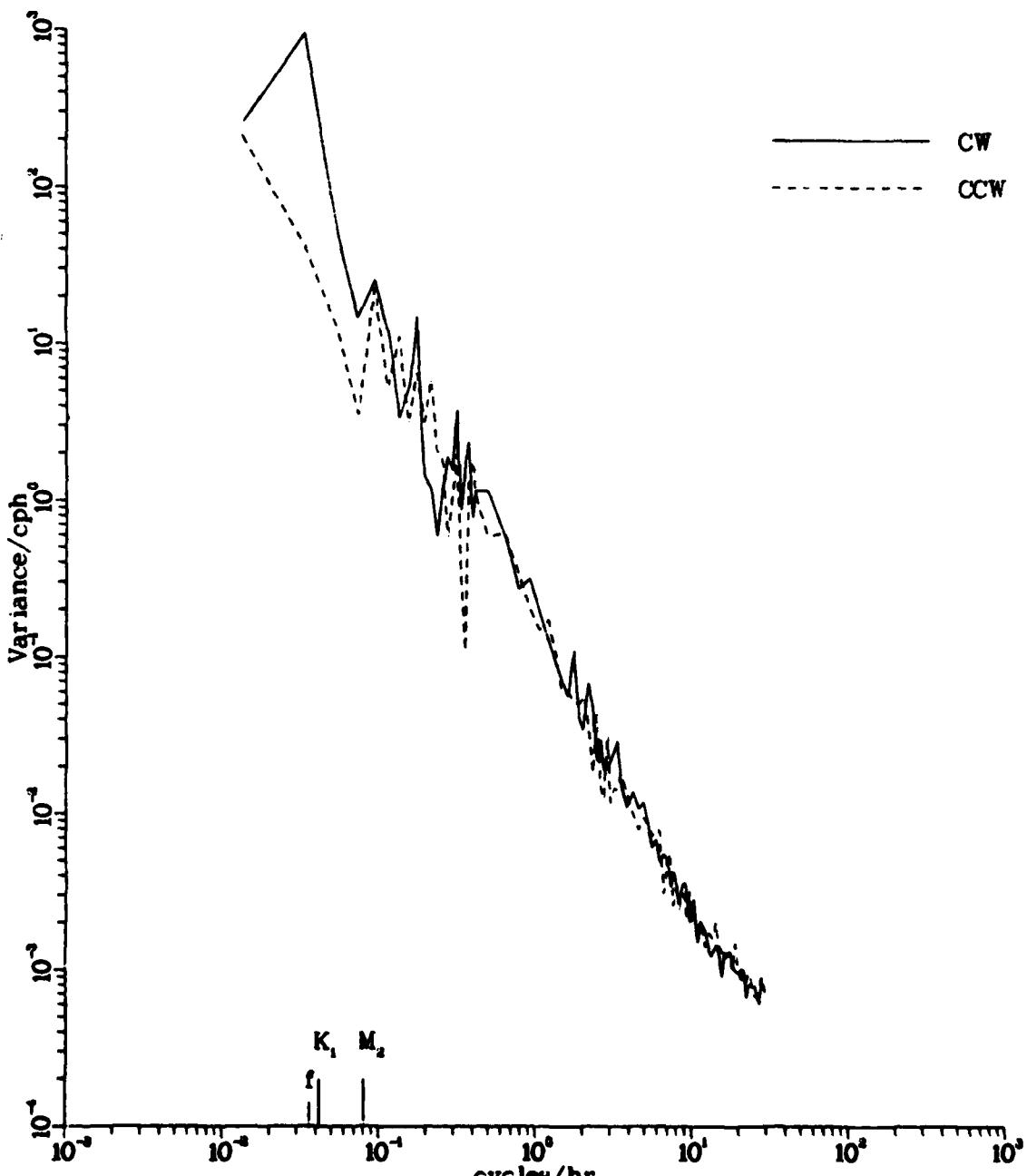


Figure 236.

ROTARY SPECTRUM

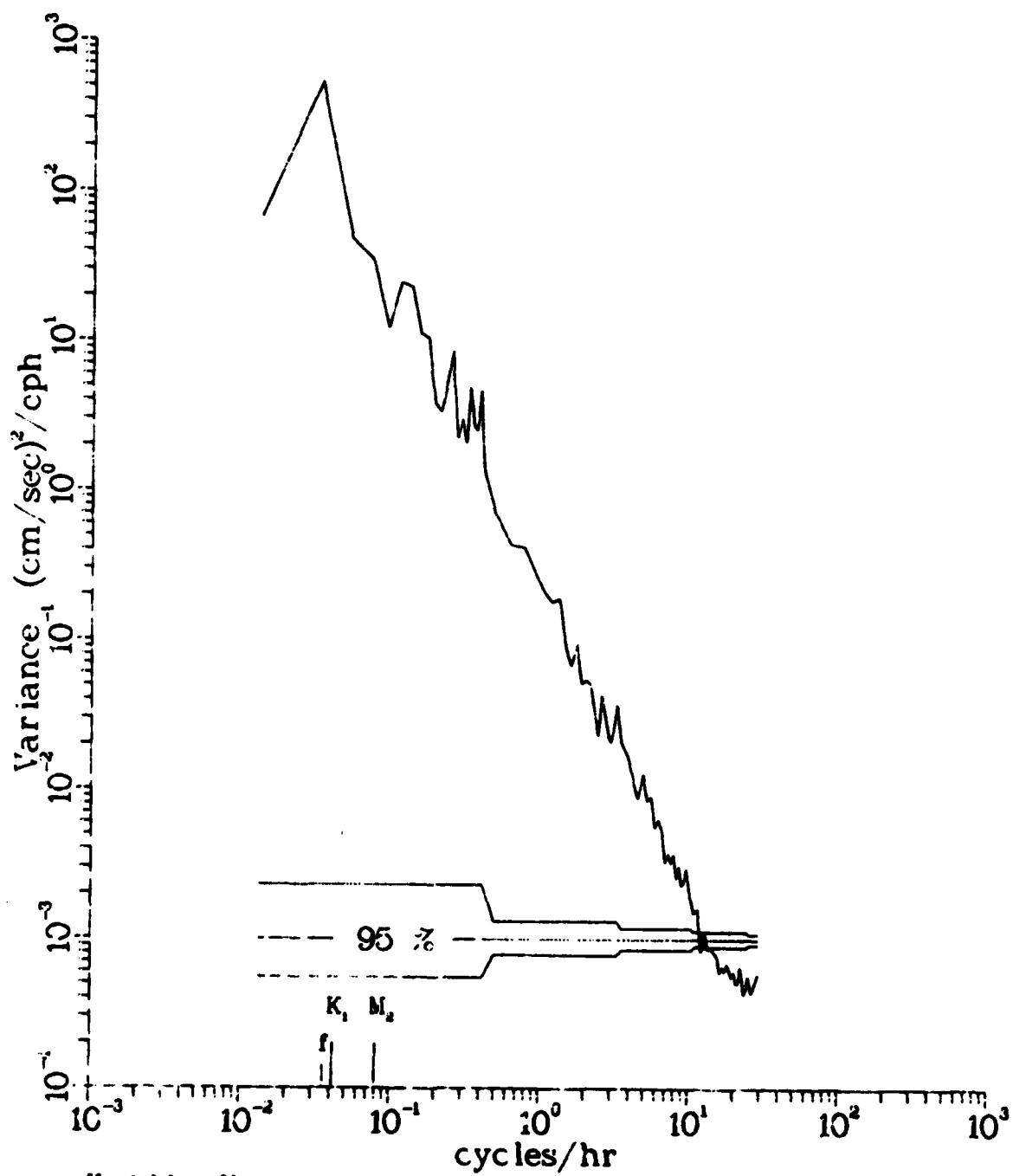


Variable : U
 Depth : 000200
 Meter : 790100
 Lat. : 25.805555
 Long : -89.744165

Variable : V
 Depth : 000200
 Meter : 790100
 Lat. : 25.805555
 Long : -89.744165

Figure 237.

CURRENT SPECTRUM

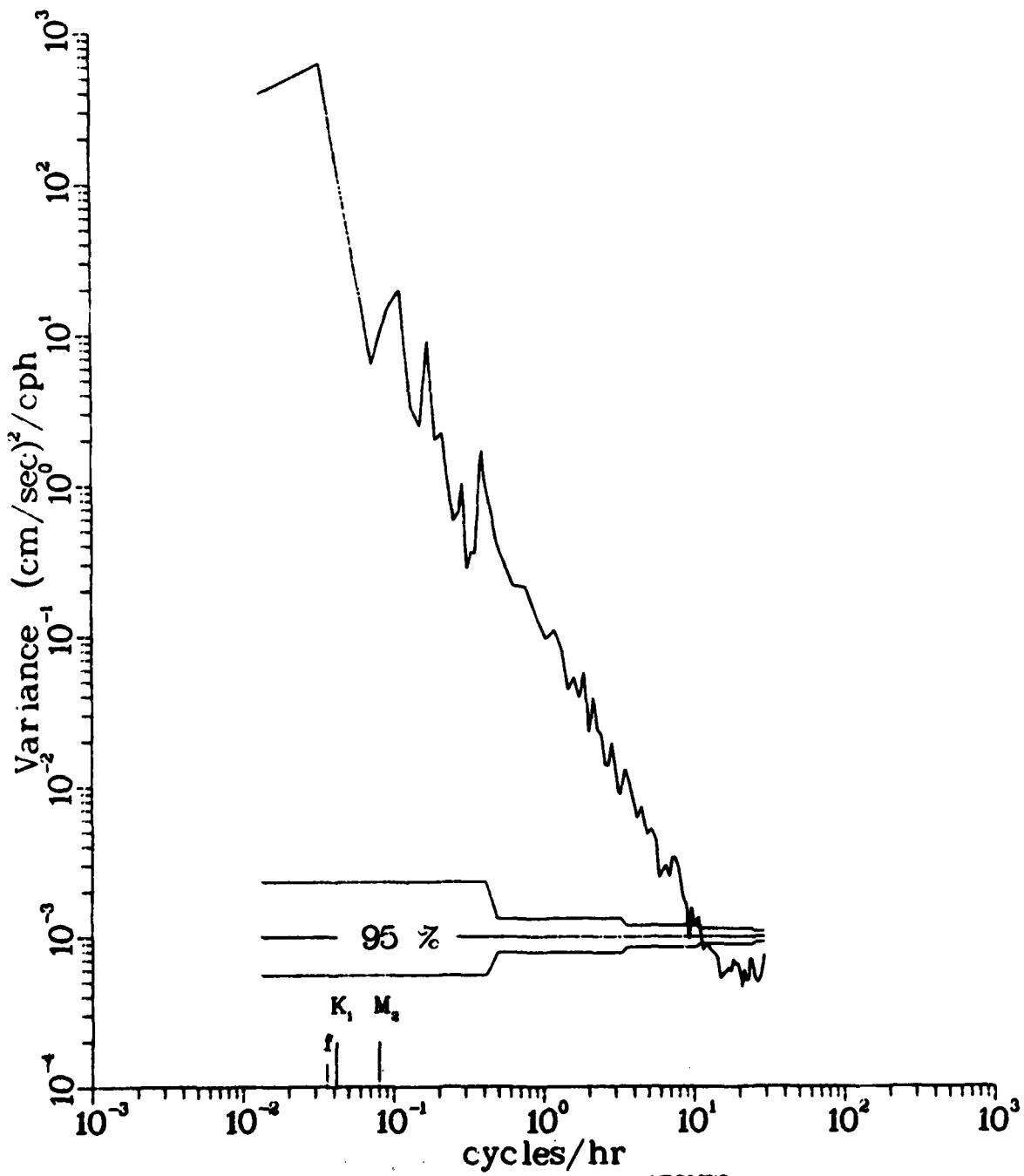


Variable : U
 File : ACM
 Meter : 780100
 Lat. : 25.803333
 Long : -89.744105

Array : ATOM79
 Depth : 000207
 Start : 20 DEC 1979
 End : 28 DEC 1979

Figure 238.

CURRENT SPECTRUM

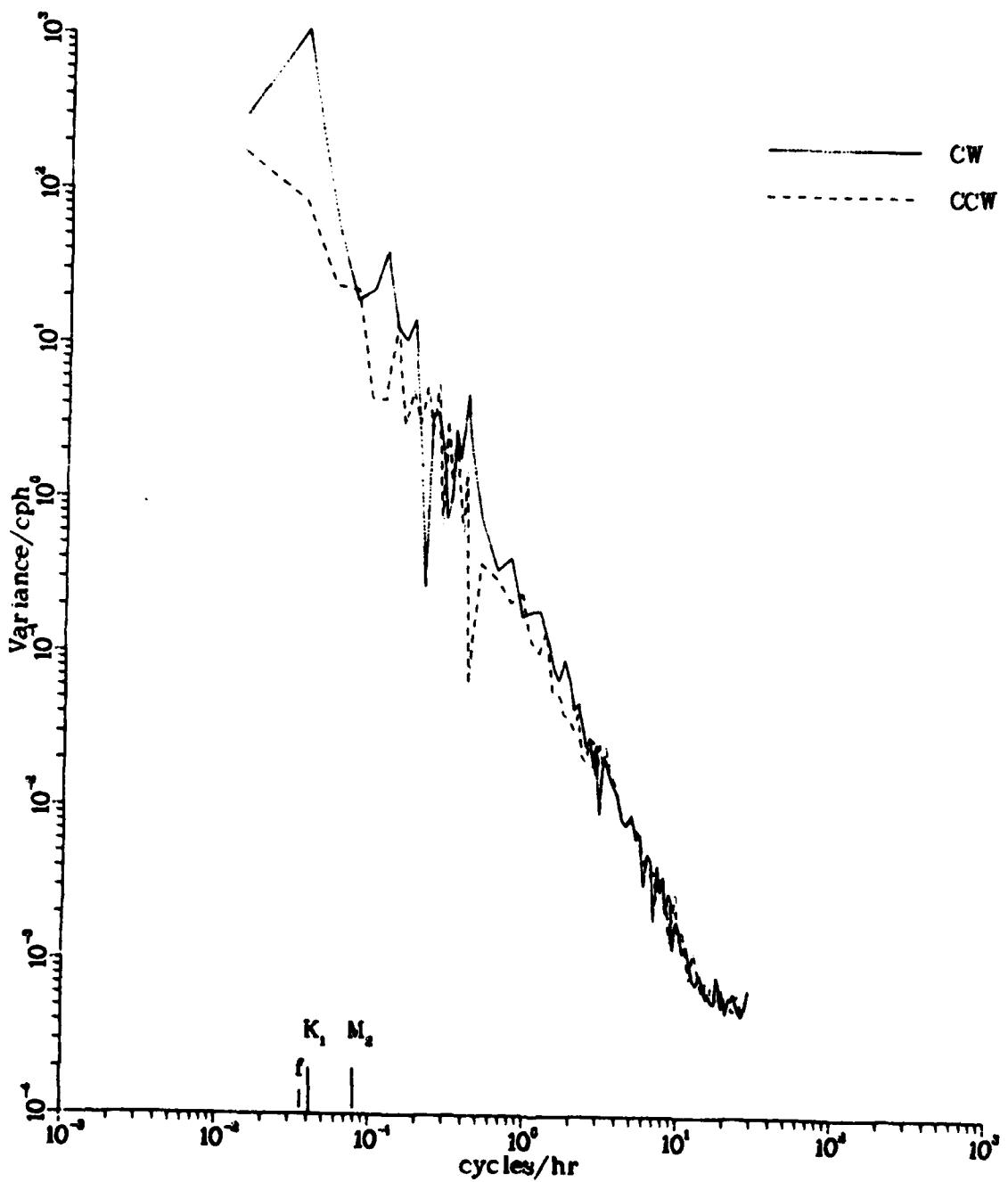


Variable : V
 File : ACM
 Meter : 780100
 Lat. : 25.805555
 Long : -89.744165

Array : ATOM79
 Depth : 000207
 Start : 20 DEC 1979
 End : 26 DEC 1979

Figure 239.

ROTARY SPECTRUM

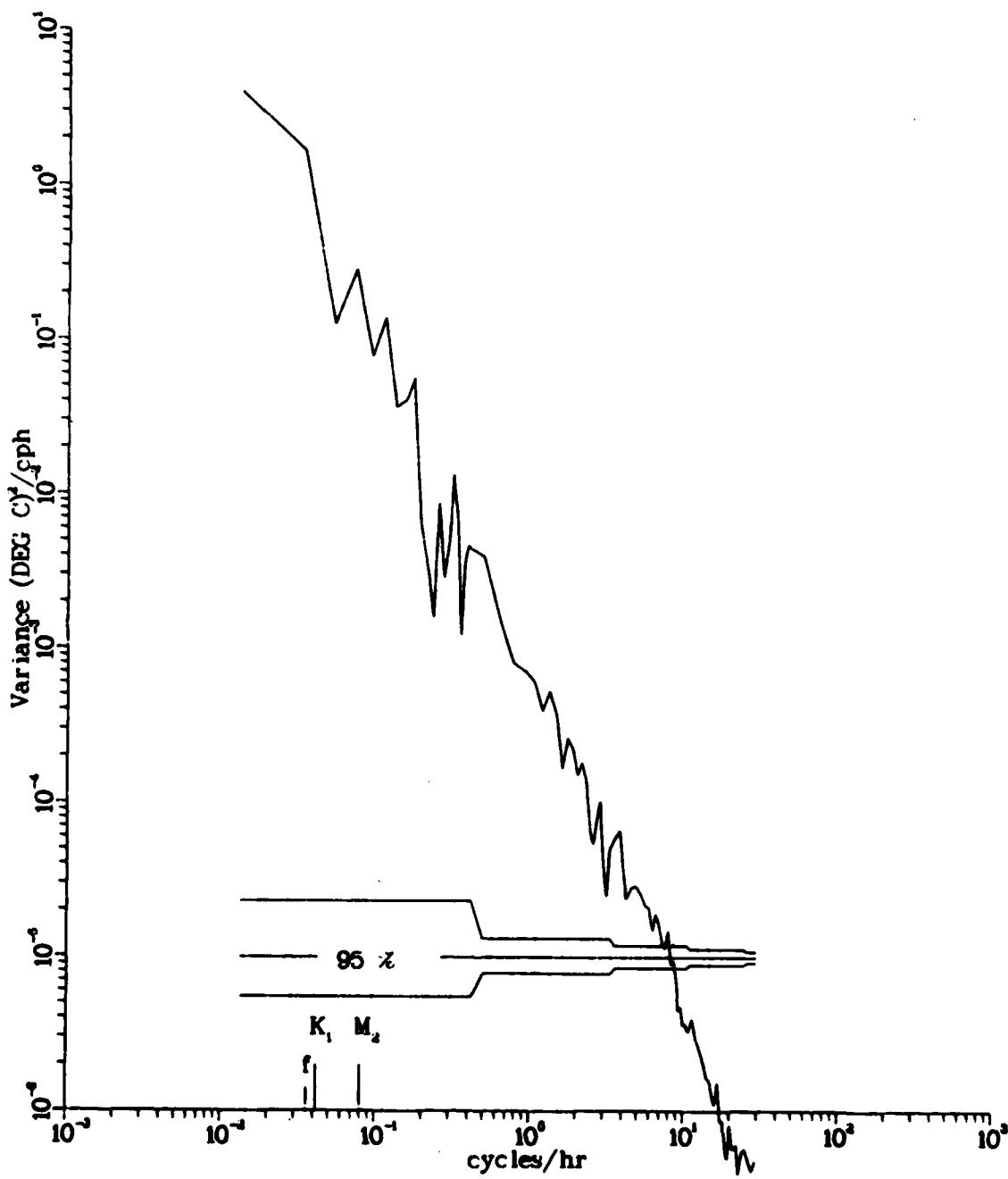


Variable . U
 Depth : 000207
 Meter : 780100
 Lat : 25.805555
 Long : -89.74165

Variable . V
 Depth : 000207
 Meter : 780100
 Lat : 25.805555
 Long : -89.74165

Figure 240.

TEMPERATURE SPECTRUM

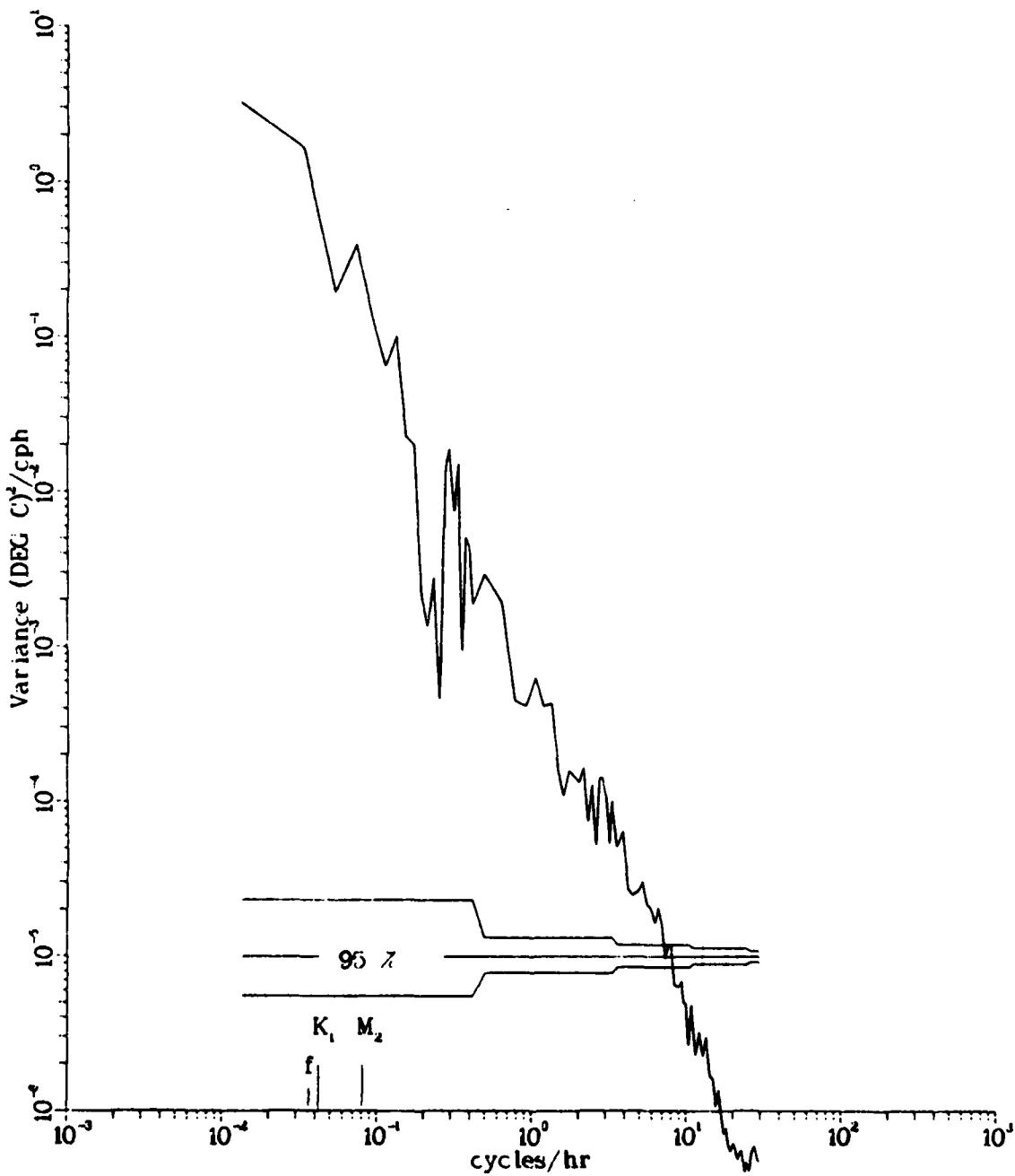


Variable : T
 File : ACM
 Meter : 780100
 Lat. : 25.805555
 Long : -89.244165

Array : ATOM79
 Depth : 000123
 Start : 20 DEC 1979
 End : 28 DEC 1979

Figure 241.

TEMPERATURE SPECTRUM

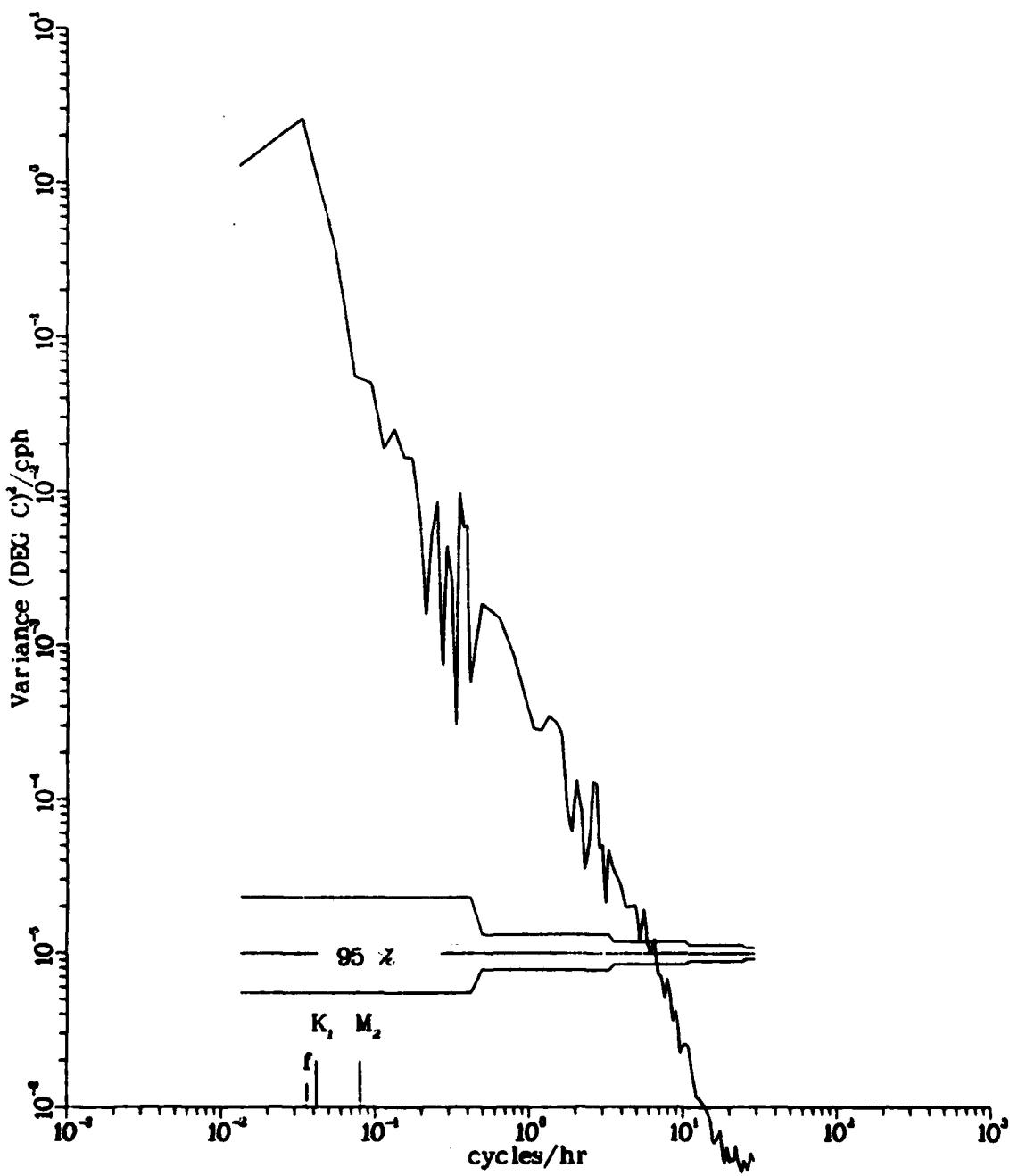


Variable T
 File ACM
 Meter 790100
 Lat 25.805555
 Long -89.74165

Array ATOM79
 Depth 000130
 Start 20 DEC 1979
 End 26 DEC 1979

Figure 242.

TEMPERATURE SPECTRUM

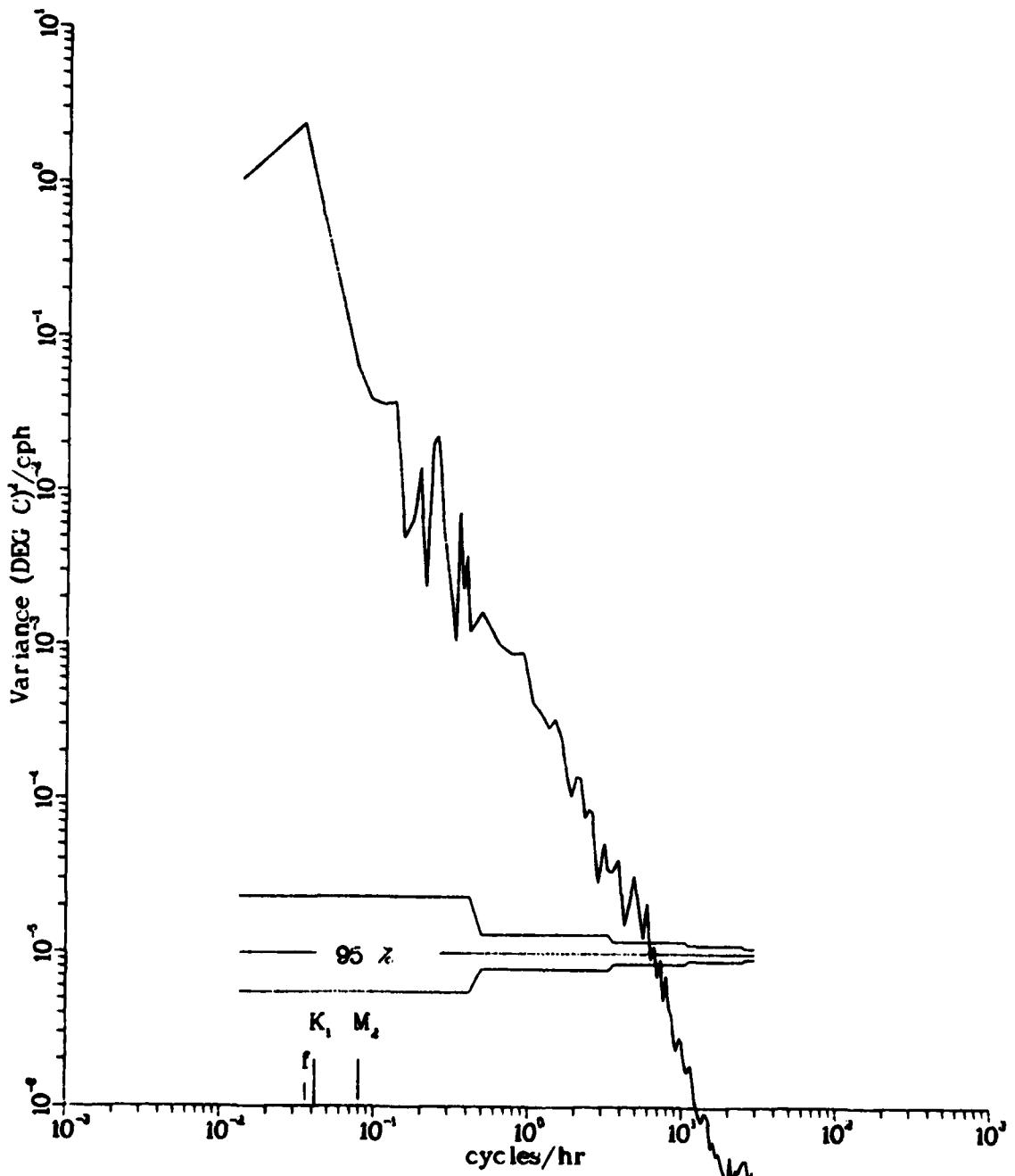


Variable : T
 File : ACM
 Meter : 790100
 Lat. : 25.803555
 Long : -89.744165

Array : ATOM79
 Depth : 000144
 Start : 20 DEC 1979
 End : 26 DEC 1979

Figure 243.

TEMPERATURE SPECTRUM

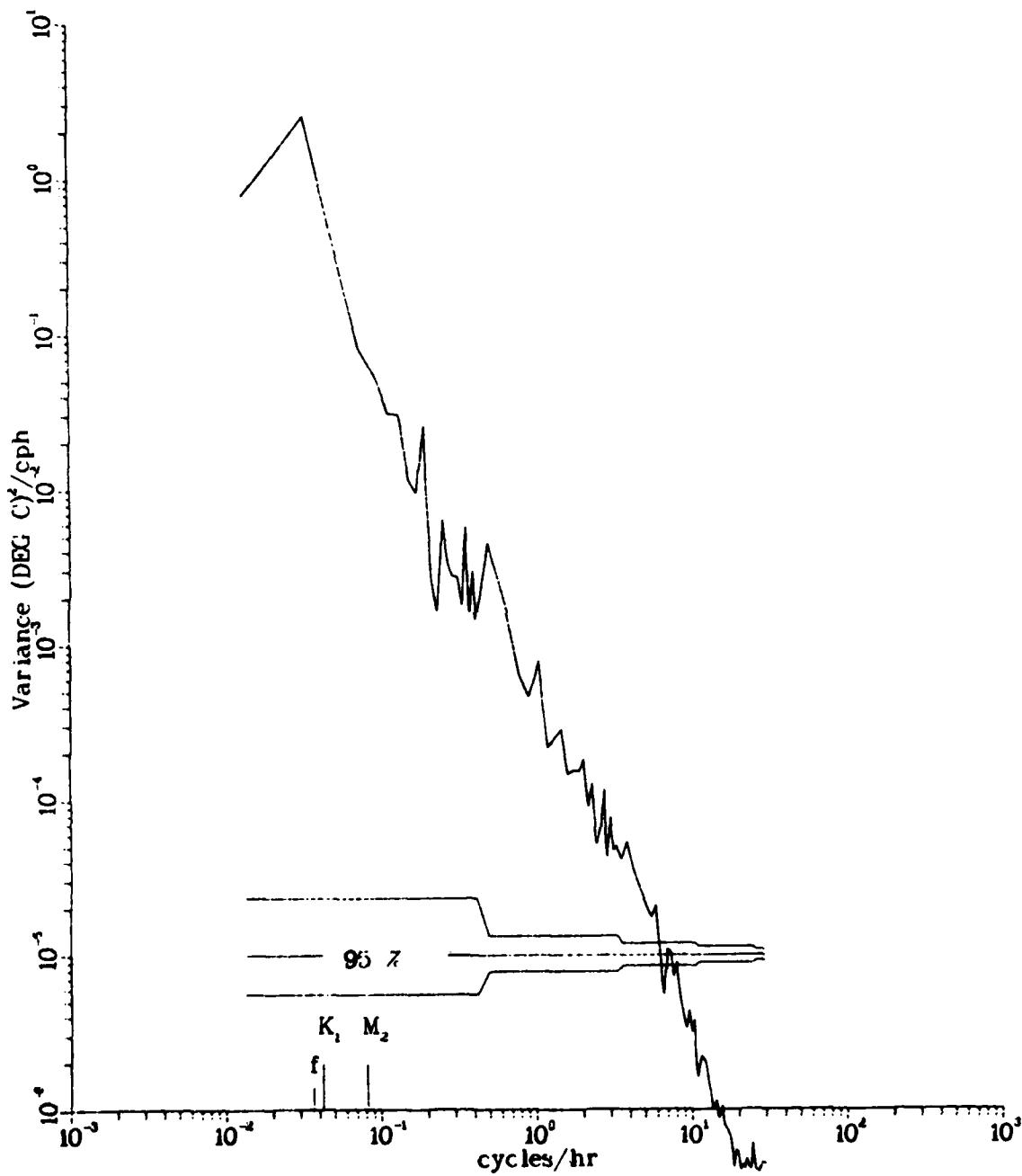


Variable T
 File ACM
 Meter 790100
 Lat 25.805555
 Long -89.714165

Array ATOM79
 Depth 000151
 Start 20 DEC 1979
 End 26 DEC 1979

Figure 244.

TEMPERATURE SPECTRUM



Variable : T
 File : ACM
 Meter : 790100
 Lat. : 25 805555
 Long : -89 74165

Array : ATOM79
 Depth : 000158
 Start : 20 DEC 1979
 End : 26 DEC 1979

Figure 245.

TEMPERATURE SPECTRUM

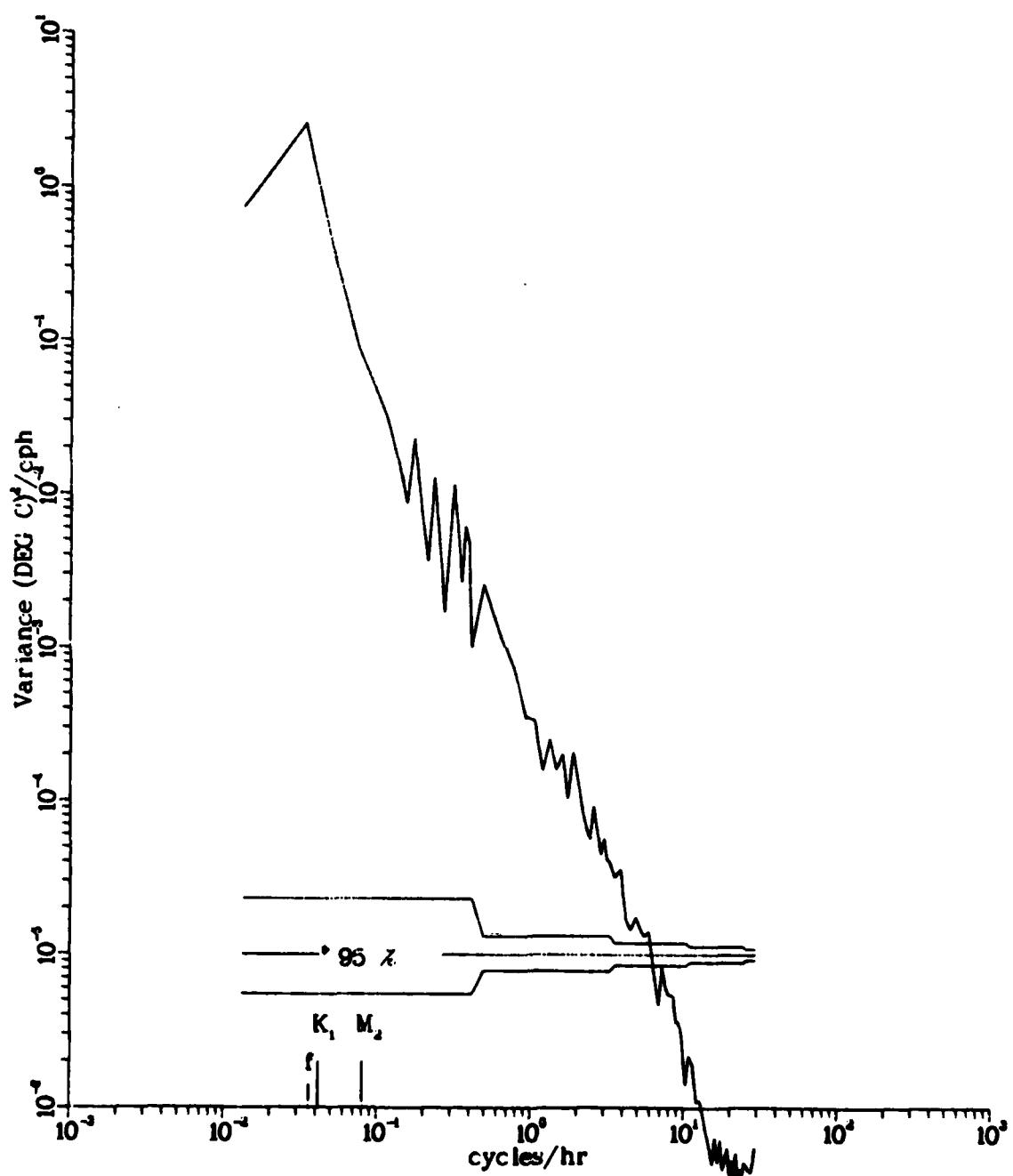
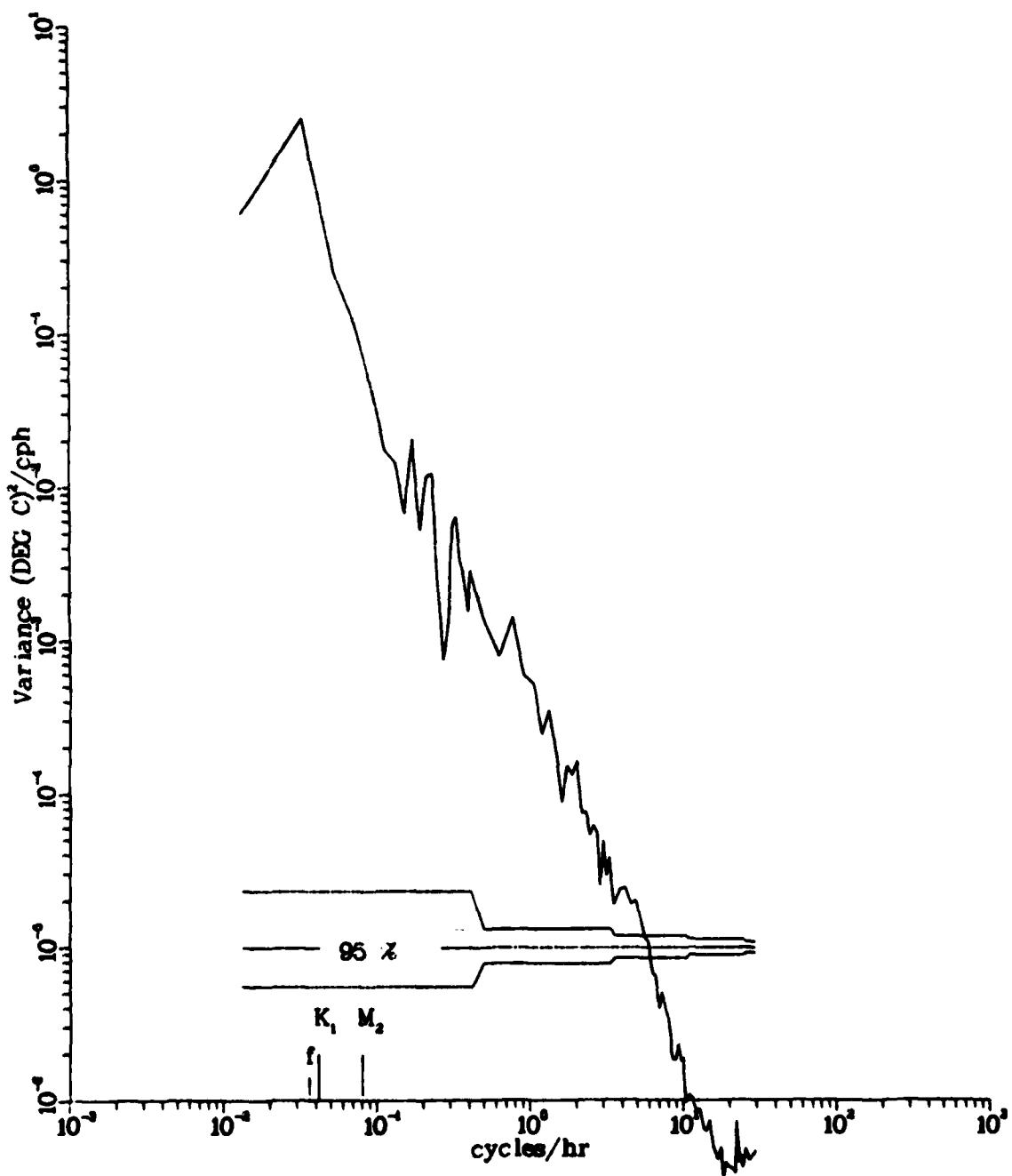


Figure 246.

TEMPERATURE SPECTRUM

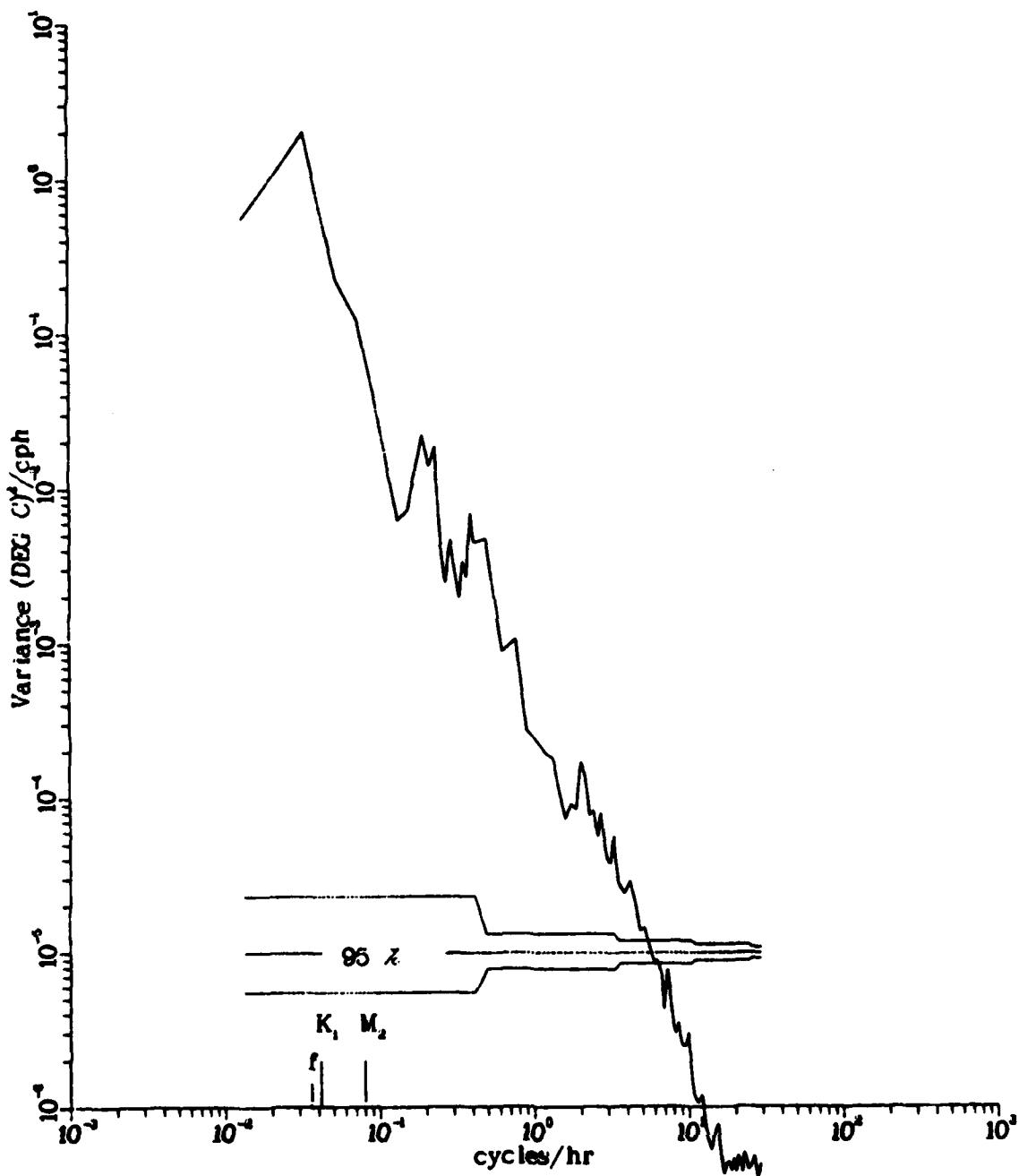


Variable : T
 File : ACM
 Meter : 790100
 Lat. : 25.805555
 Long : -89.744185

Array : ATOM79
Depth : 000f72
Start : 20 DEC 1979
End : 26 DEC 1979

Figure 247.

TEMPERATURE SPECTRUM

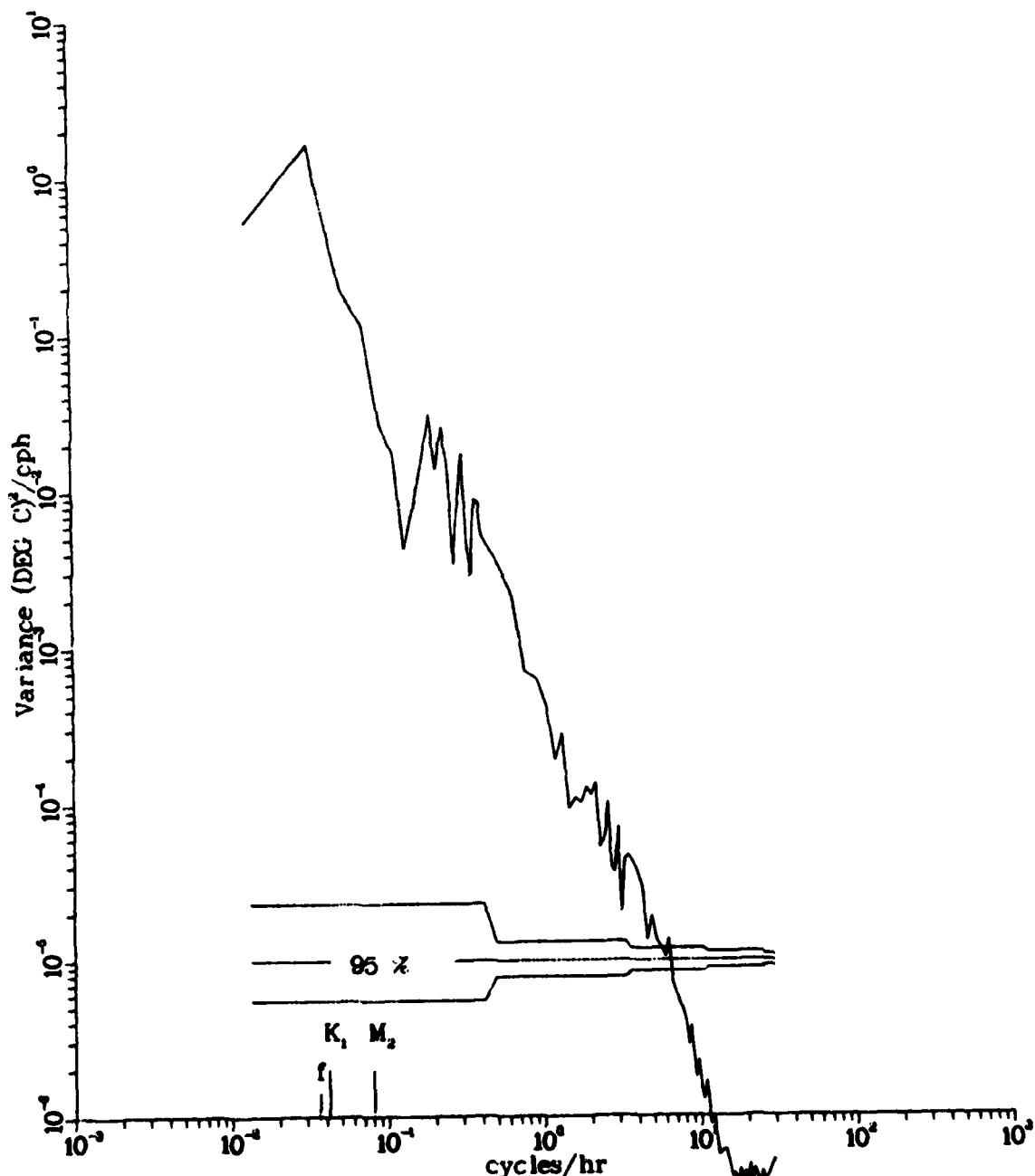


Variable T
File ACM
Meter 790100
Lat. 25.805566
Long -89.74165

Array ATOM79
Depth 000179
Start 20 DEC 1979
End 26 DEC 1979

Figure 248.

TEMPERATURE SPECTRUM

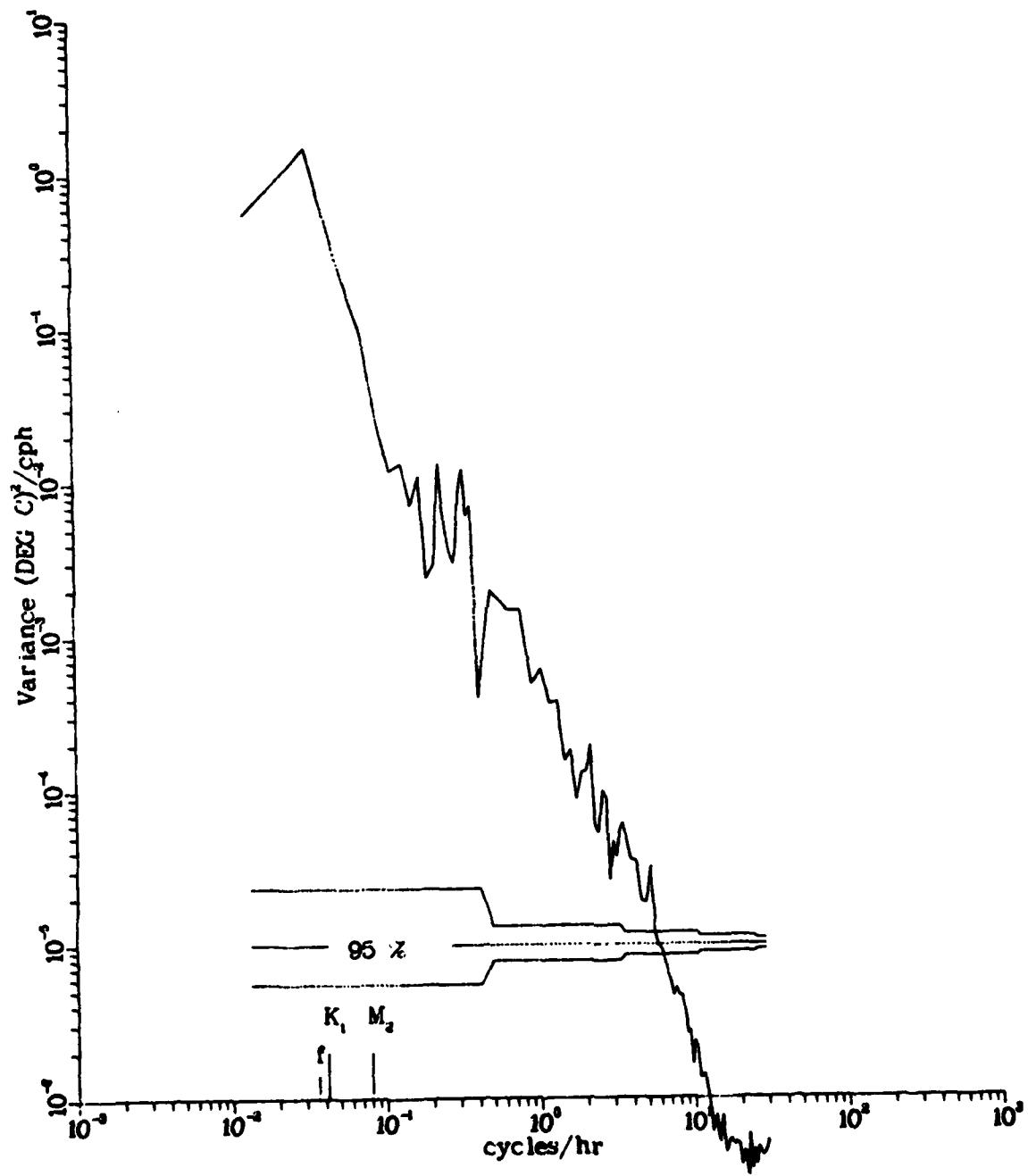


Variable : T
 File : ACM
 Meter : 790100
 Lat. : 25.805588
 Long : -89.74165

Array : ATOM79
 Depth : 000186
 Start : 20 DEC 1979
 End : 26 DEC 1979

Figure 249.

TEMPERATURE SPECTRUM

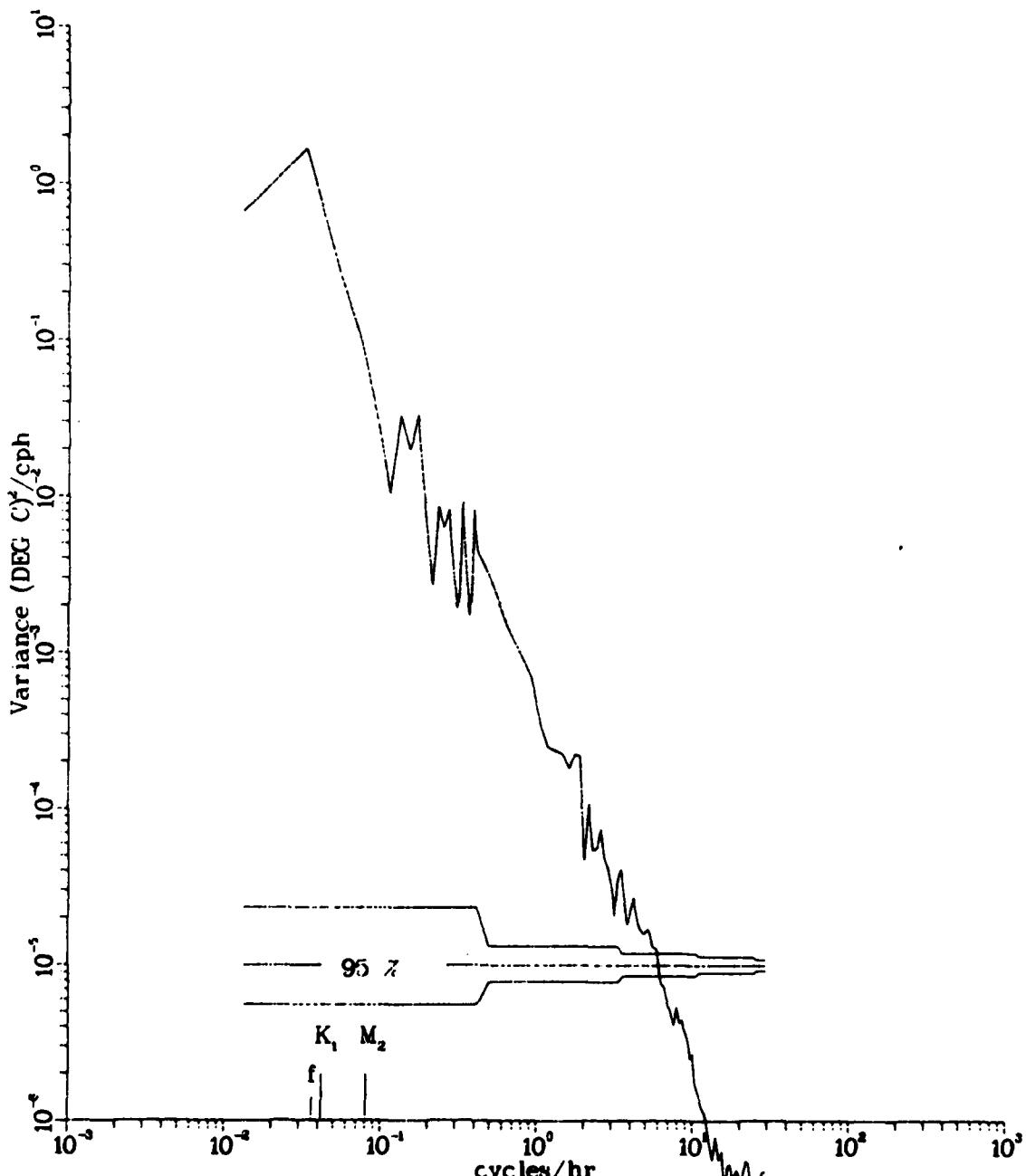


Variable : T
 File : ACM
 Meter : 790100
 Lat. : 25.805555
 Long : -89.744165

Array : ATOM79
 Depth : 000193
 Start : 20 DEC 1979
 End : 26 DEC 1979

Figure 250.

TEMPERATURE SPECTRUM

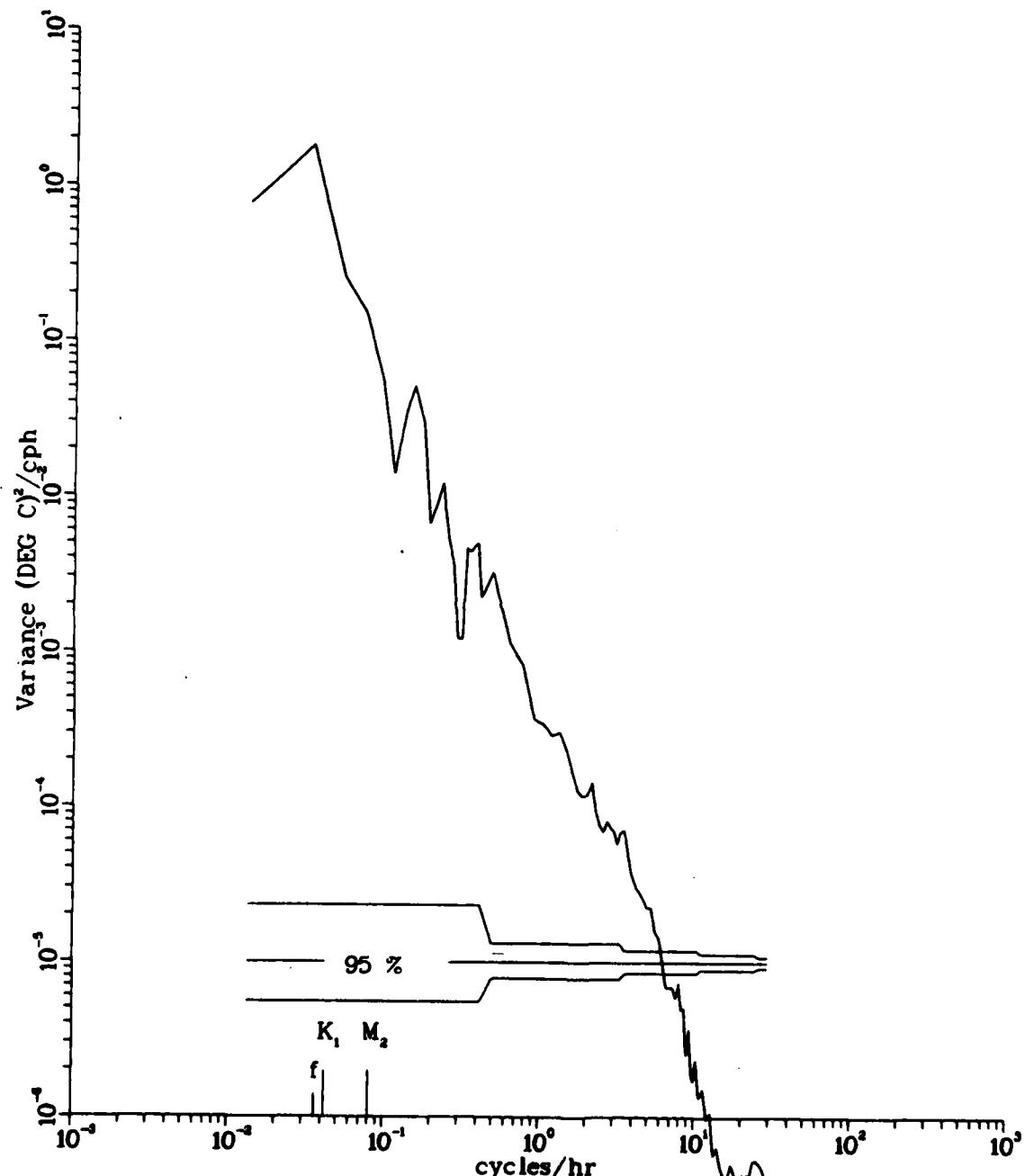


Variable : T
 File : ACM
 Meter : 790100
 Lat. : 25 805555
 Long : -89 74 4165

Array : ATOM79
 Depth : 000200
 Start : 20 DEC 1979
 End : 26 DEC 1979

Figure 251.

TEMPERATURE SPECTRUM



Variable : T
 File : ACM
 Meter : 790100
 Lat. : 25.805565
 Long. : -89.744165

Array : ATOM79
 Depth : 000207
 Start : 20 DEC 1979
 End : 26 DEC 1979

Figure 252.

4.0 STATION DATA

4.1 XBT Data - Deployment Cruise

4.1.1 Waterfall Plots - Temperature vs. Depth (Figures 253-256)

4.1.2 Waterfall Plots - High Passed Temperature vs. Depth (Figures 257-260)

XBT SEPARATION (nautical miles)

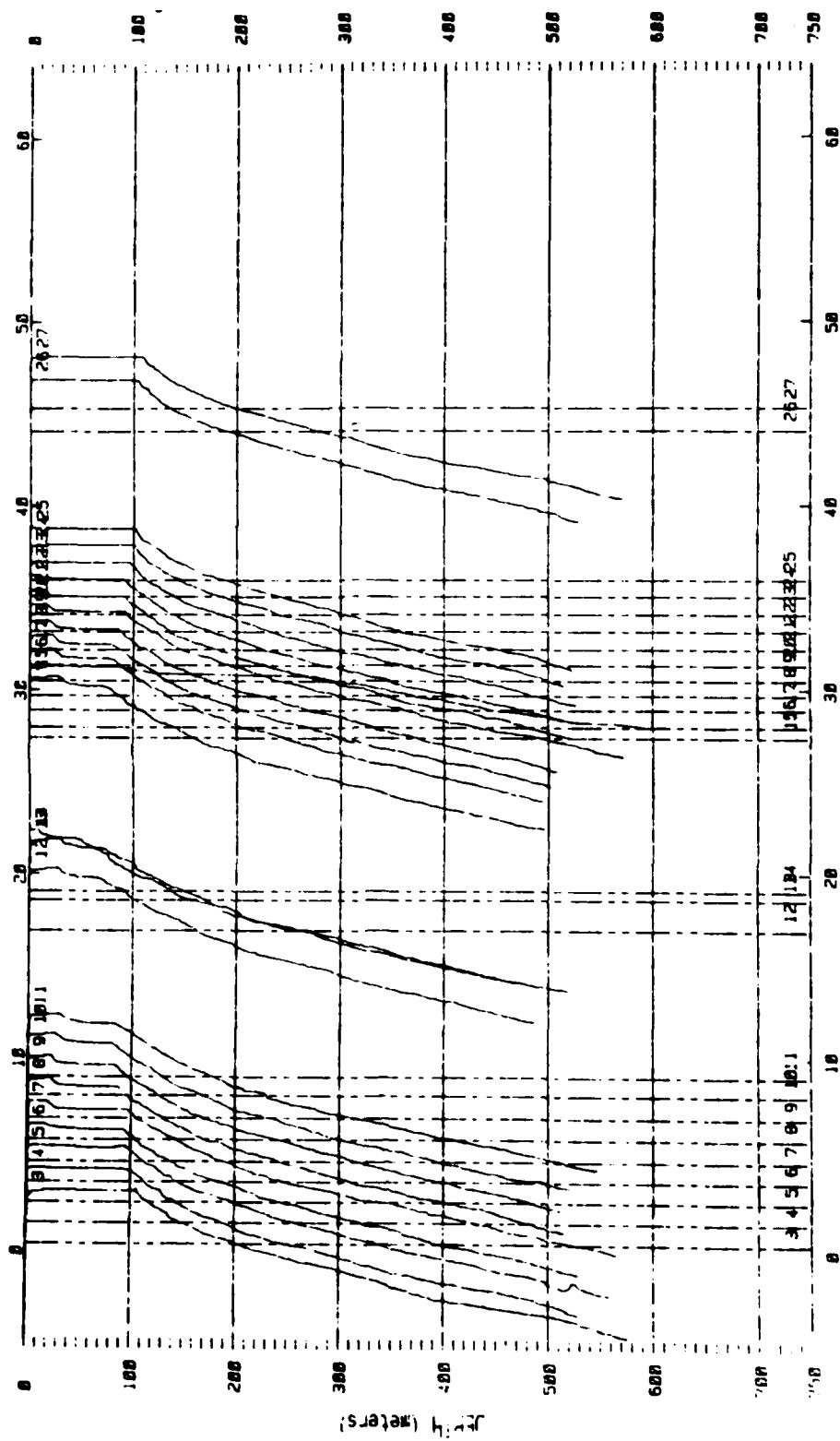


Figure 253.

XBT SEPARATION (nautical miles)

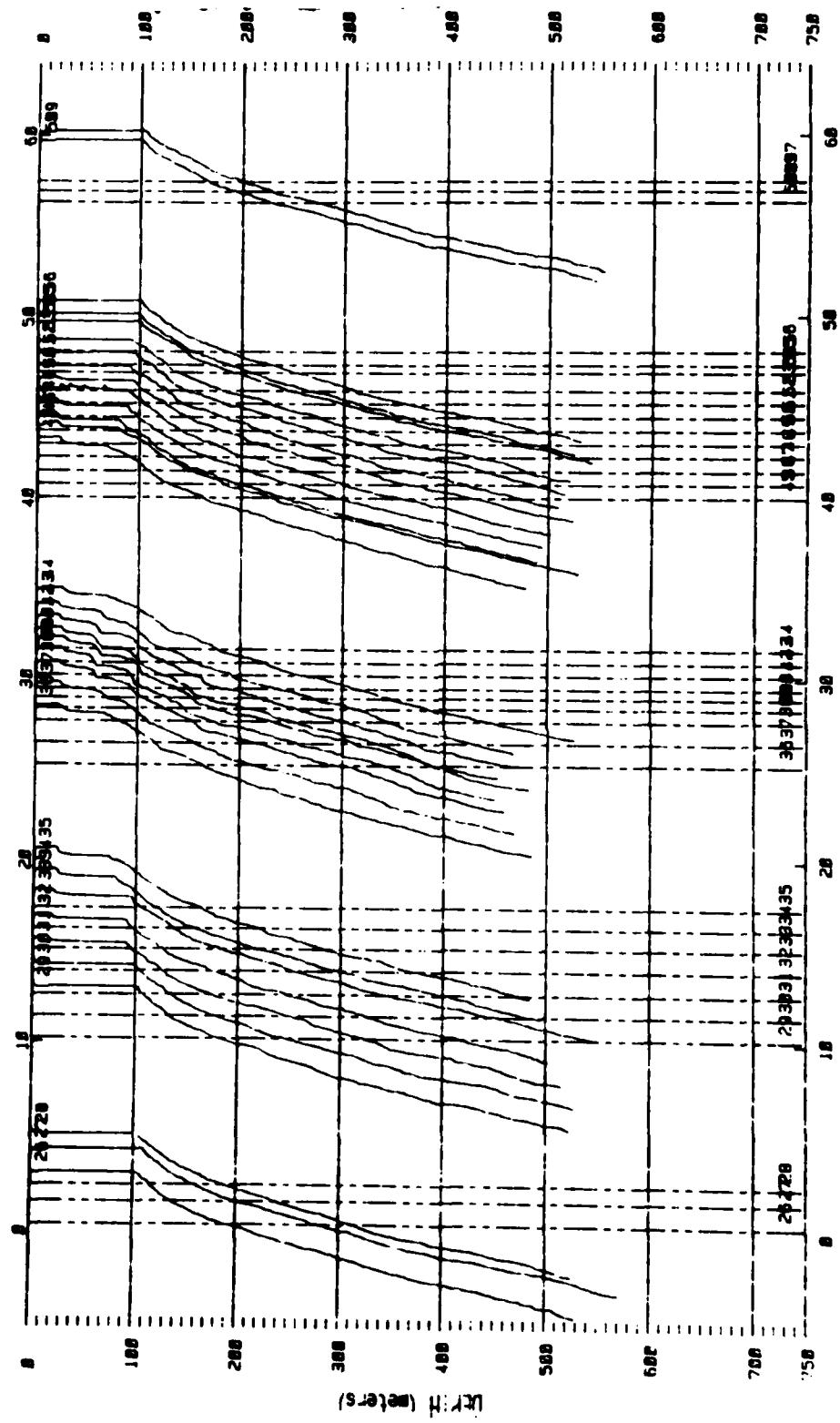


Figure 254.

XBT SEPARATION (nautical miles)

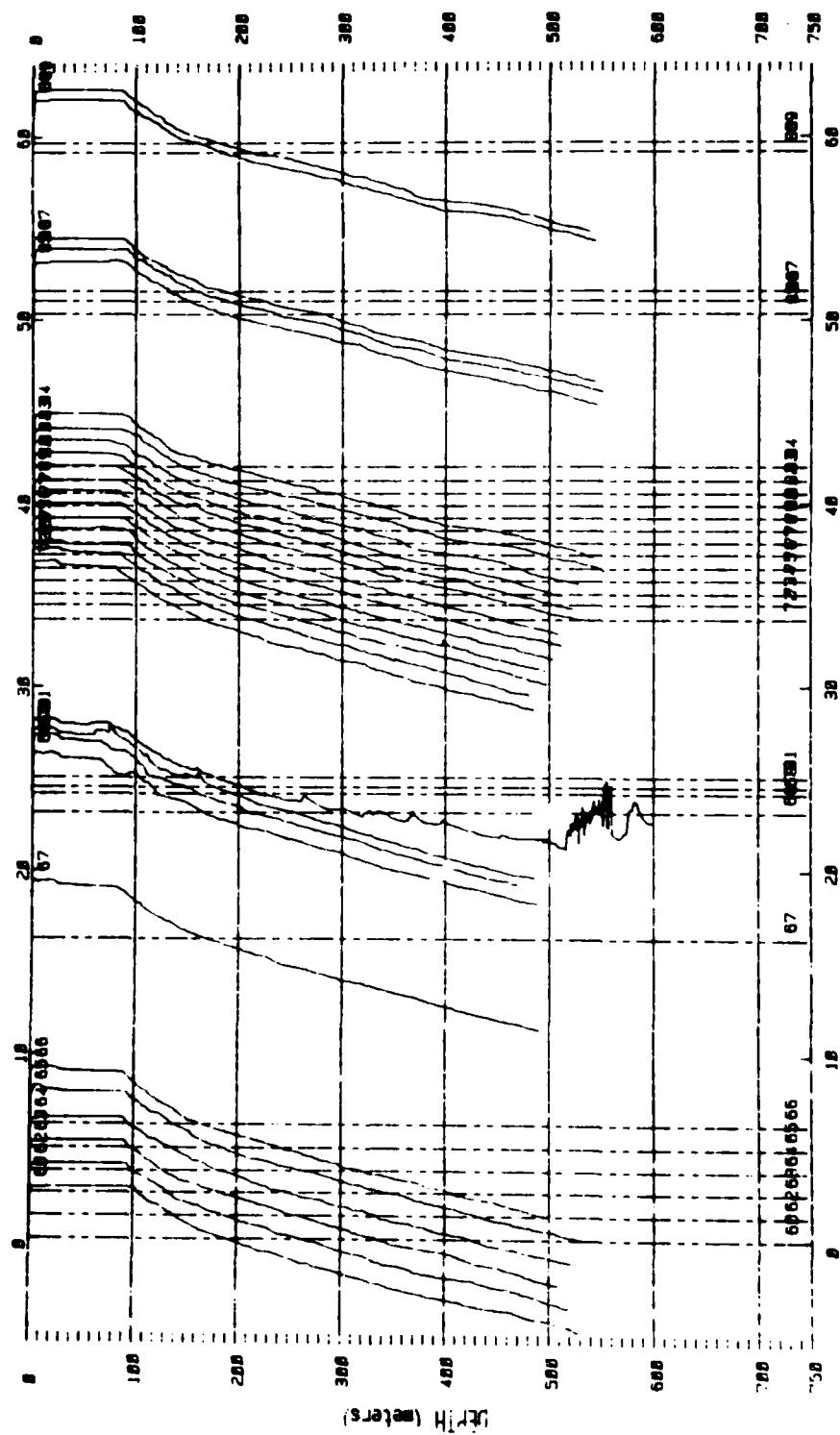


Figure 255.

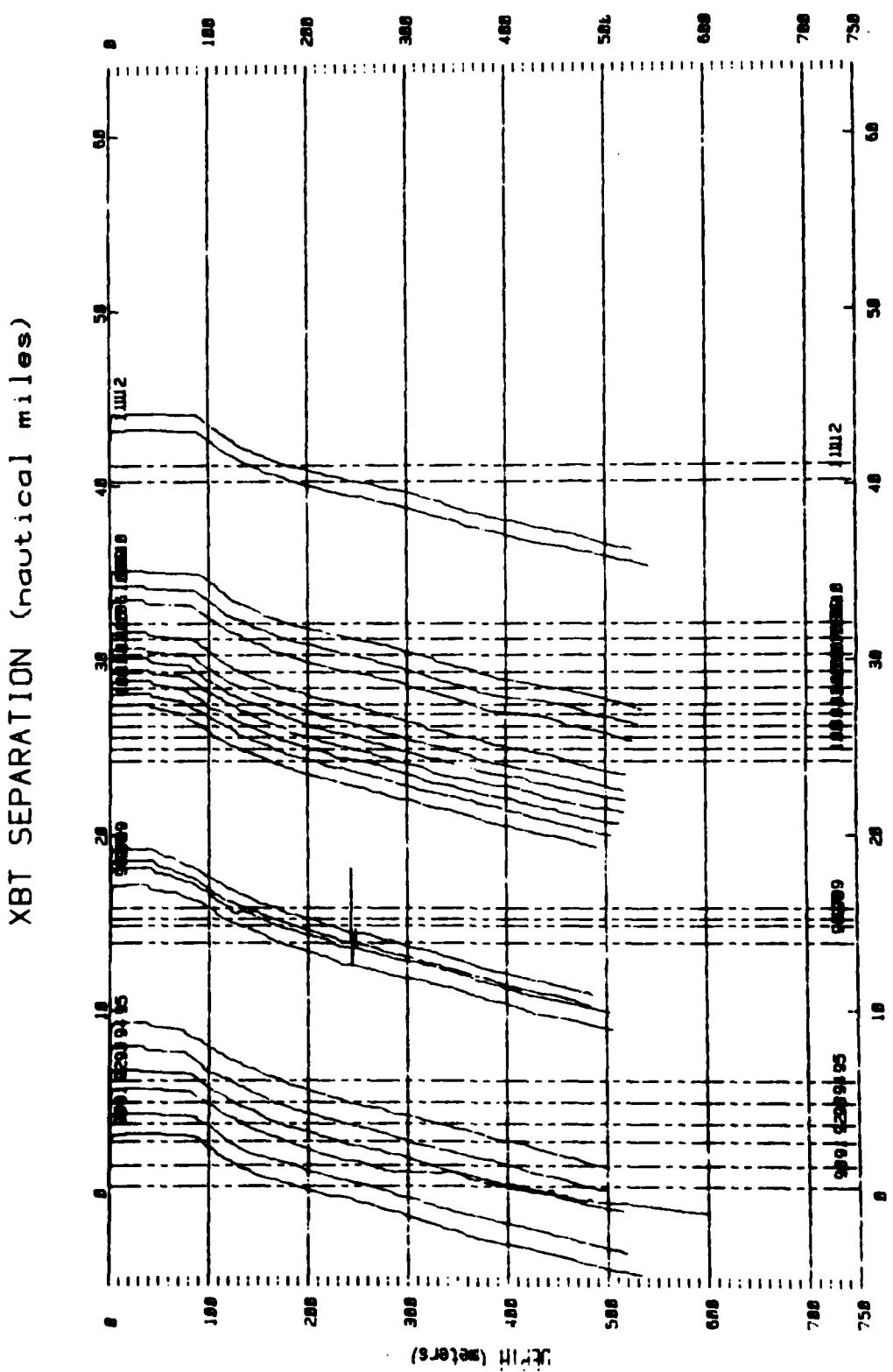


Figure 256.

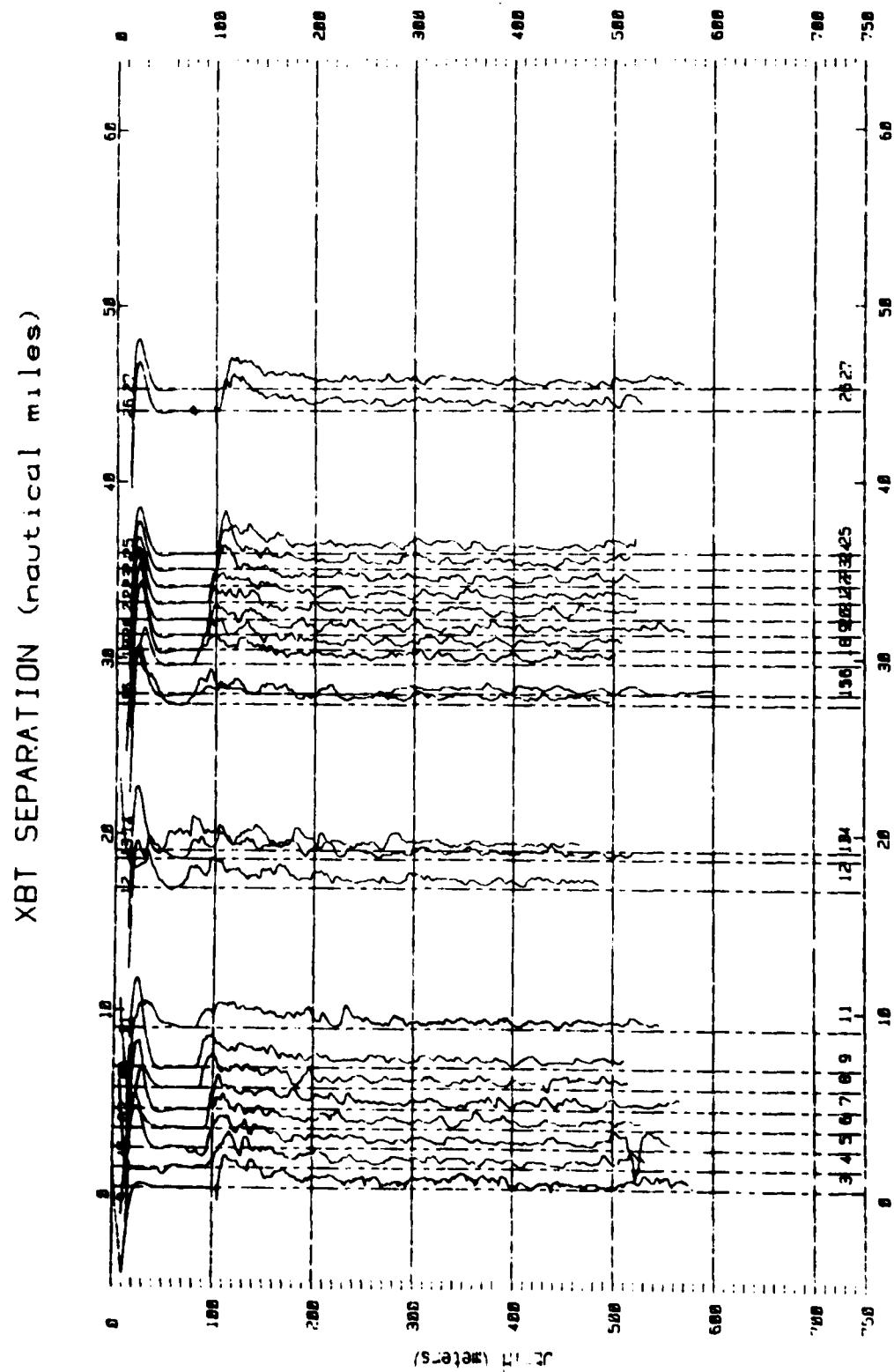


Figure 257.

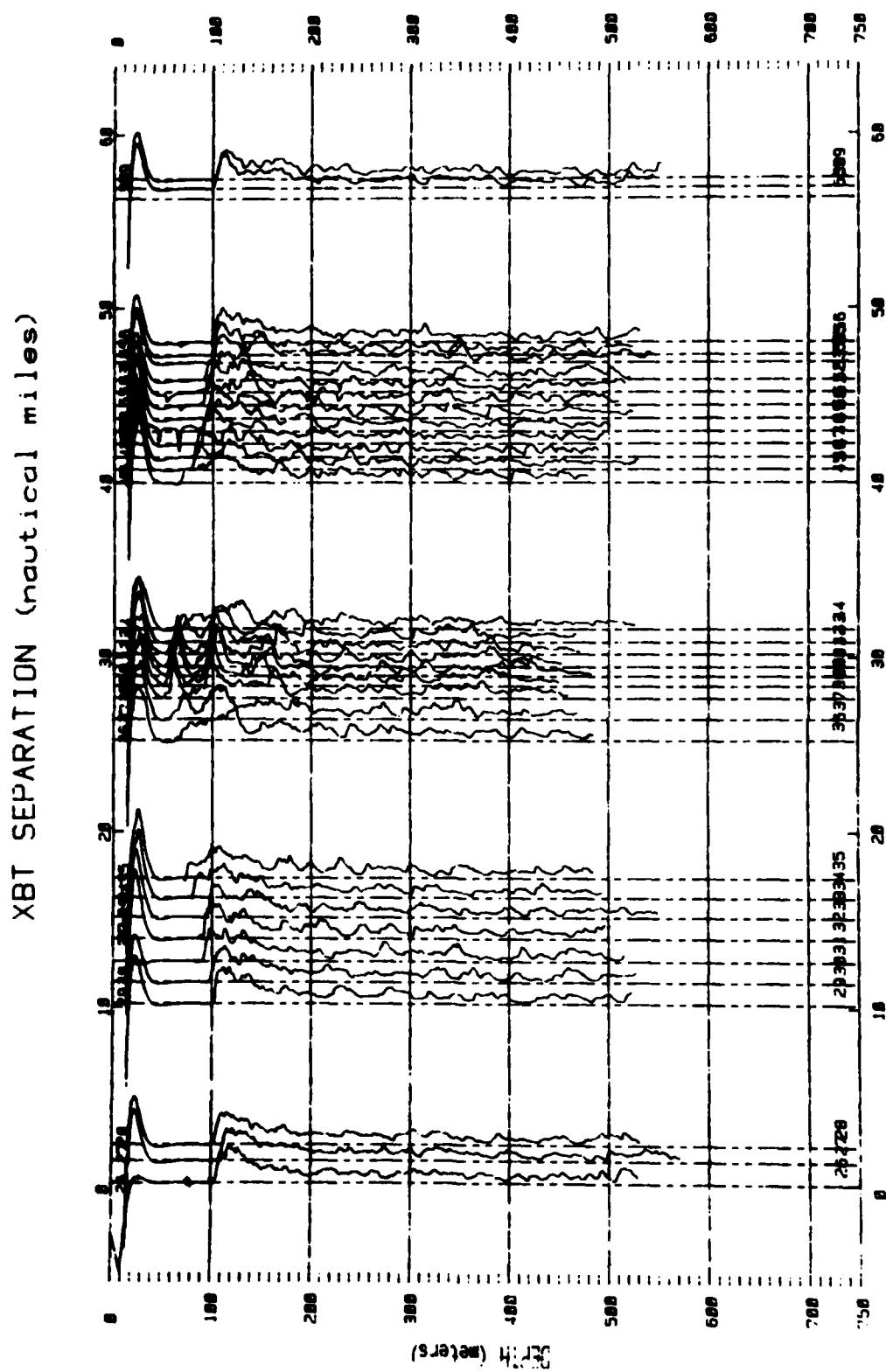


Figure 258.

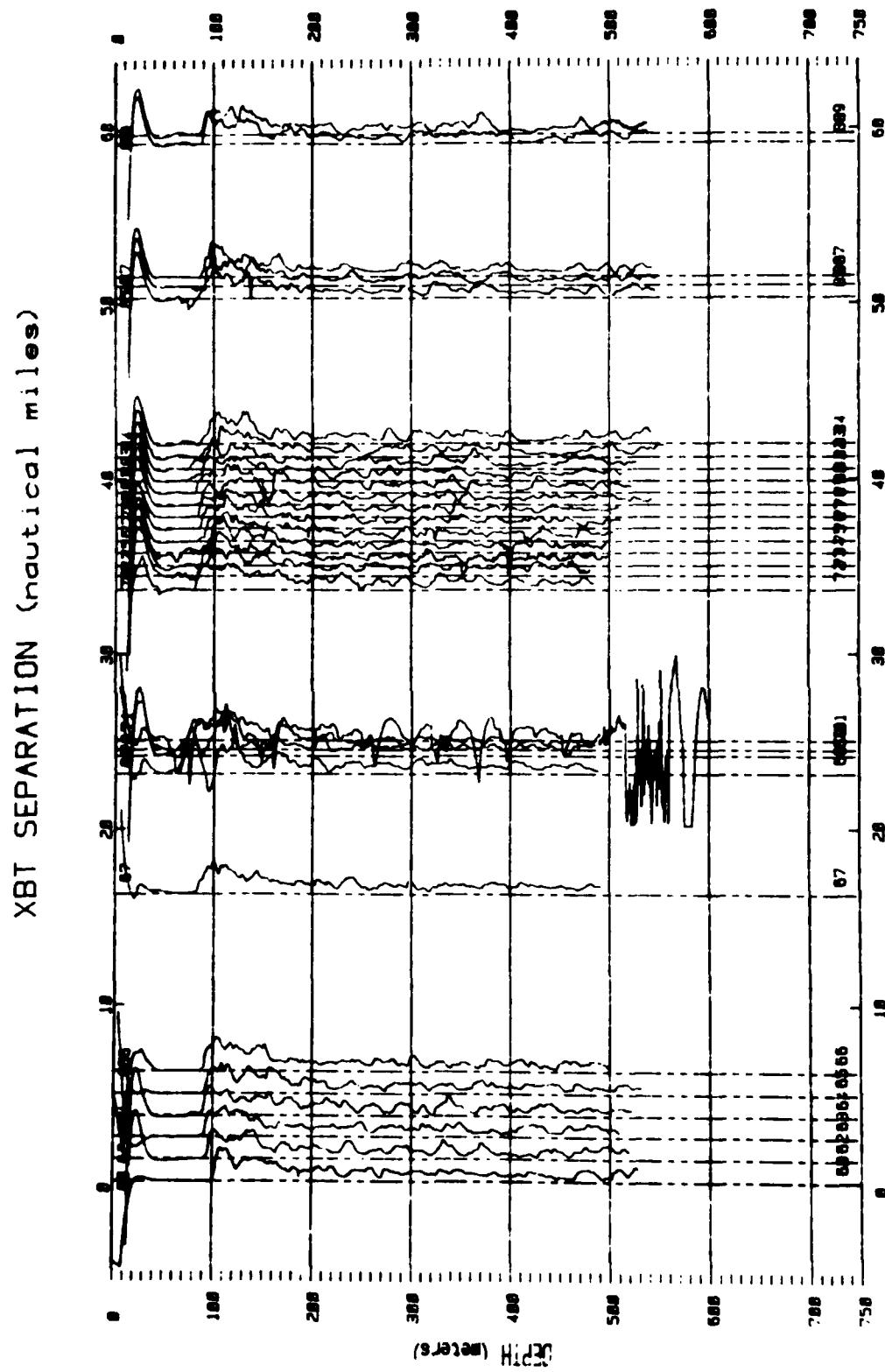


Figure 259.

XBT SEPARATION (nautical miles)

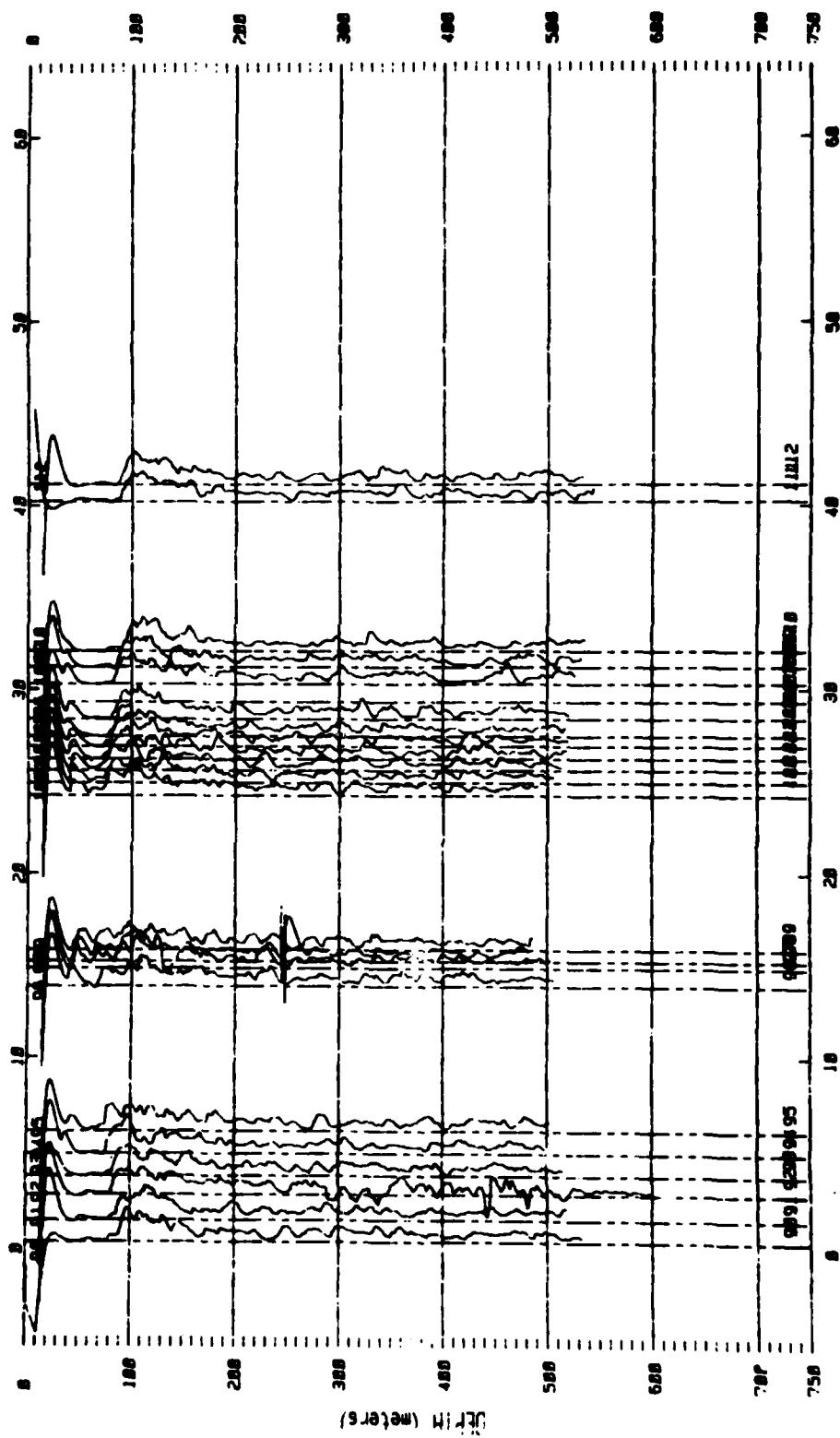


Figure 260.

4.2 XBT Data - Recovery Cruise

4.2.1 Waterfall Plots - Temperature vs. Depth (Figures 261-268)

4.2.2 Waterfall Plots - High Passed Temperature vs. Depth (Figures 269-276)

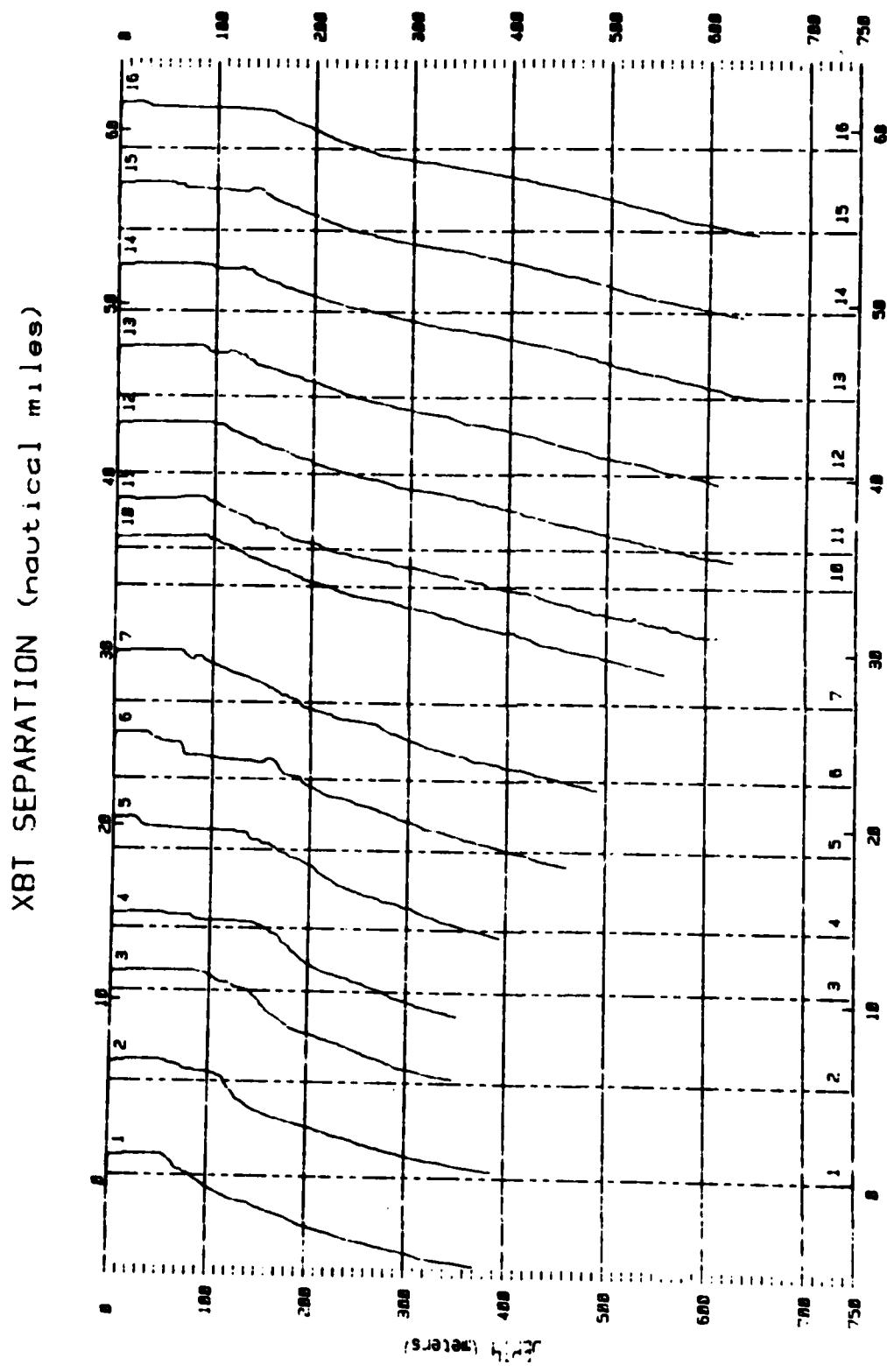


Figure 261.

XBT SEPARATION (nautical miles)

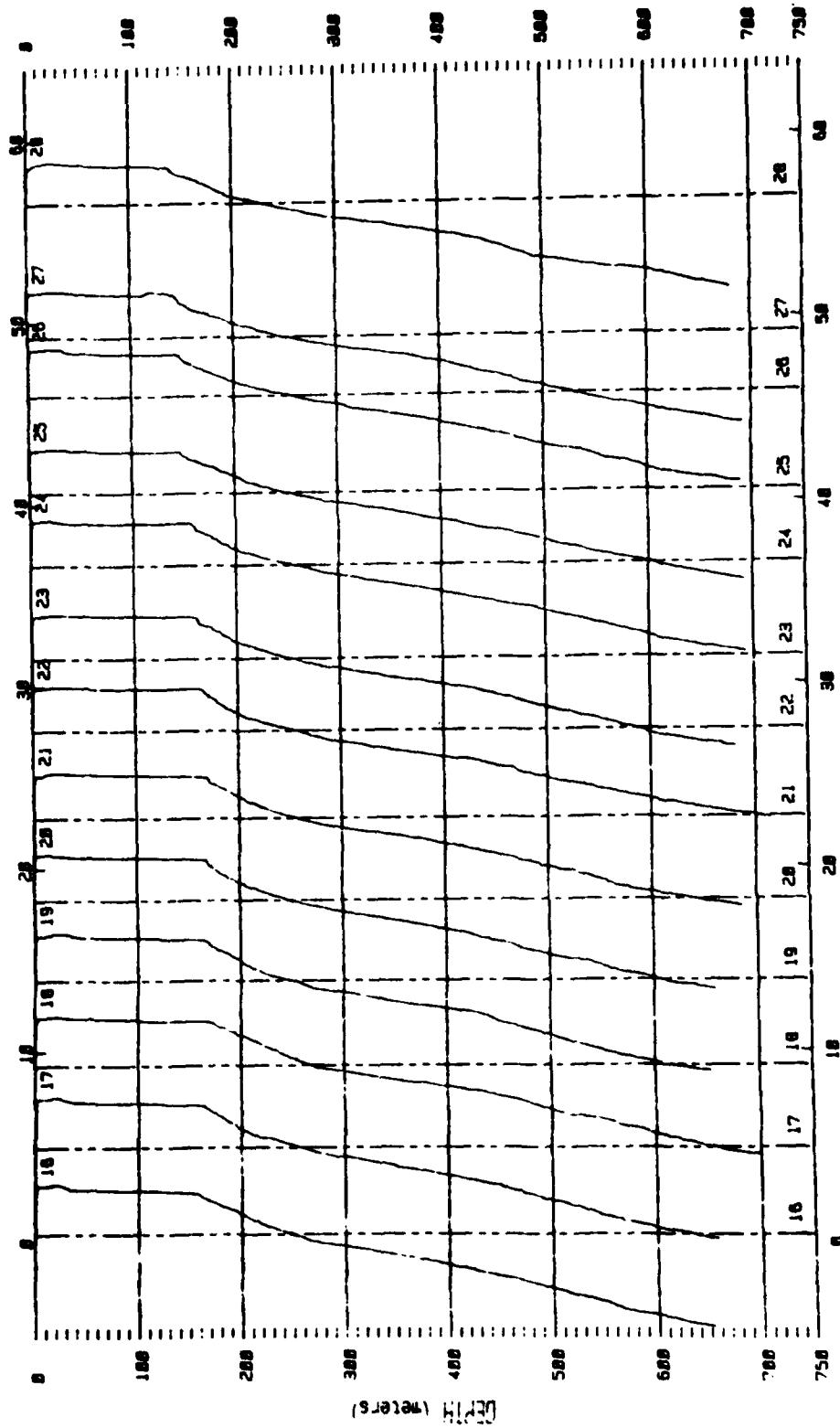


Figure 262.

XBT SEPARATION (nautical miles)

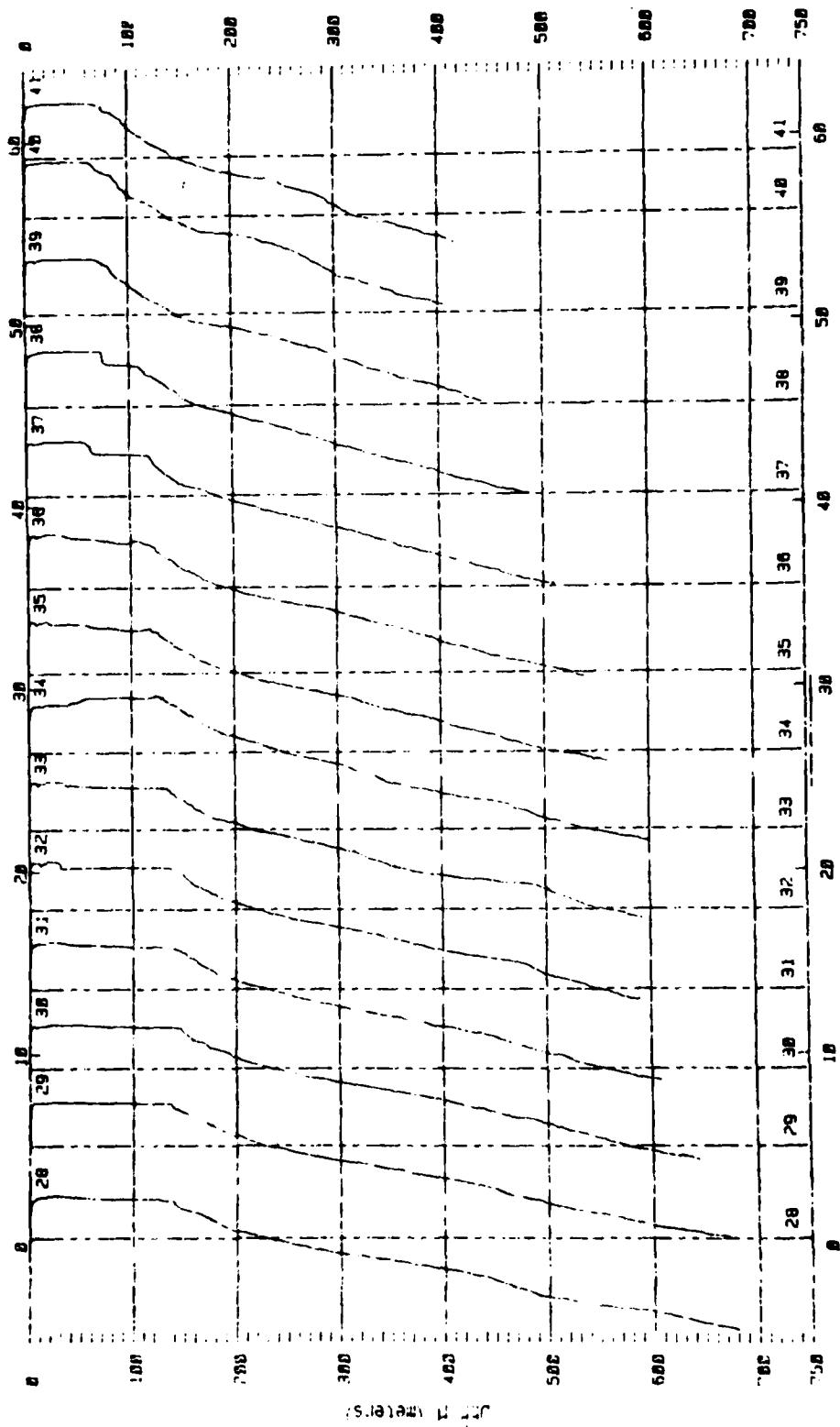


Figure 263.

XBT SEPARATION (nautical miles)

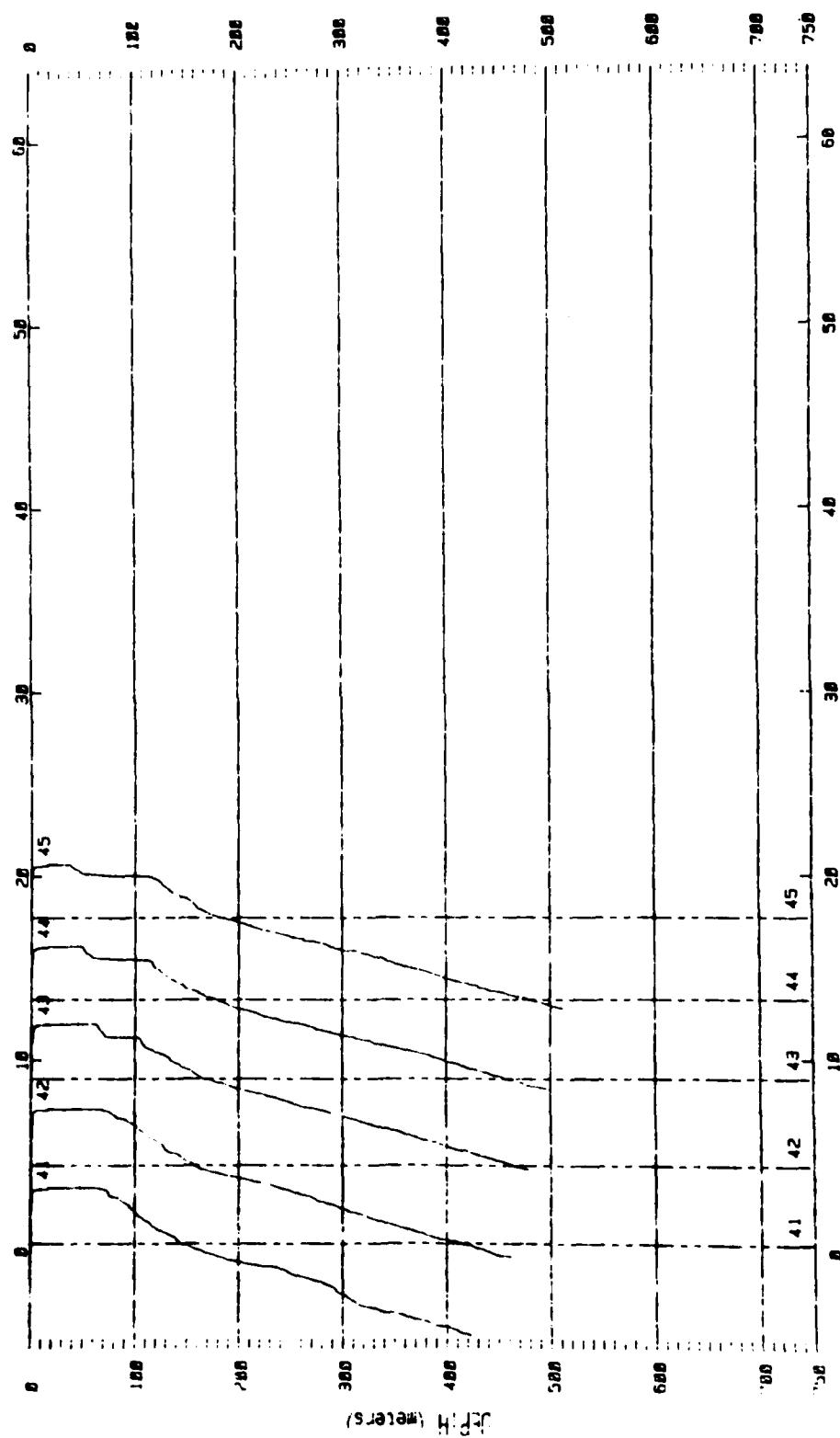


Figure 264.

XBT SEPARATION (nautical miles)

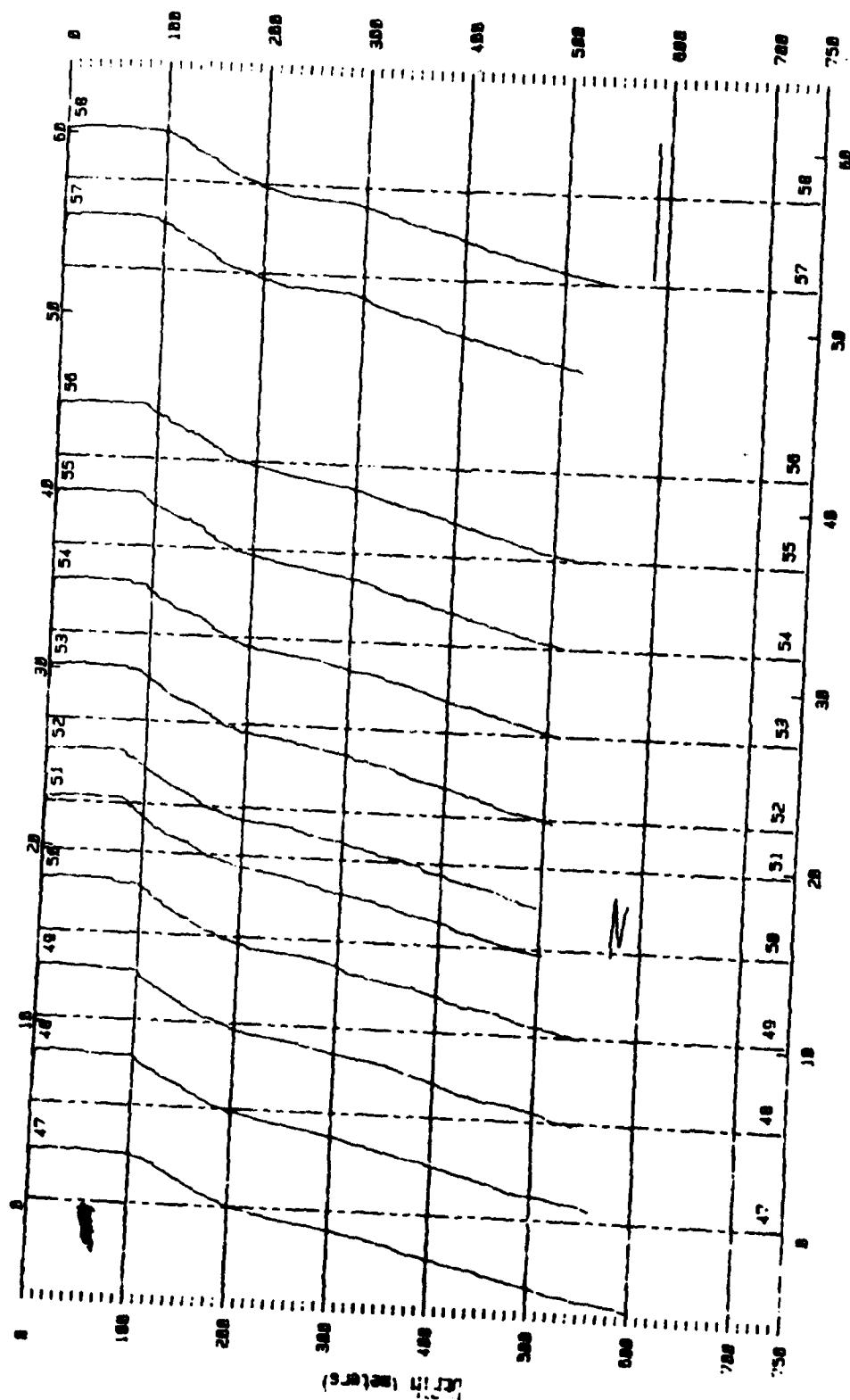


Figure 265.

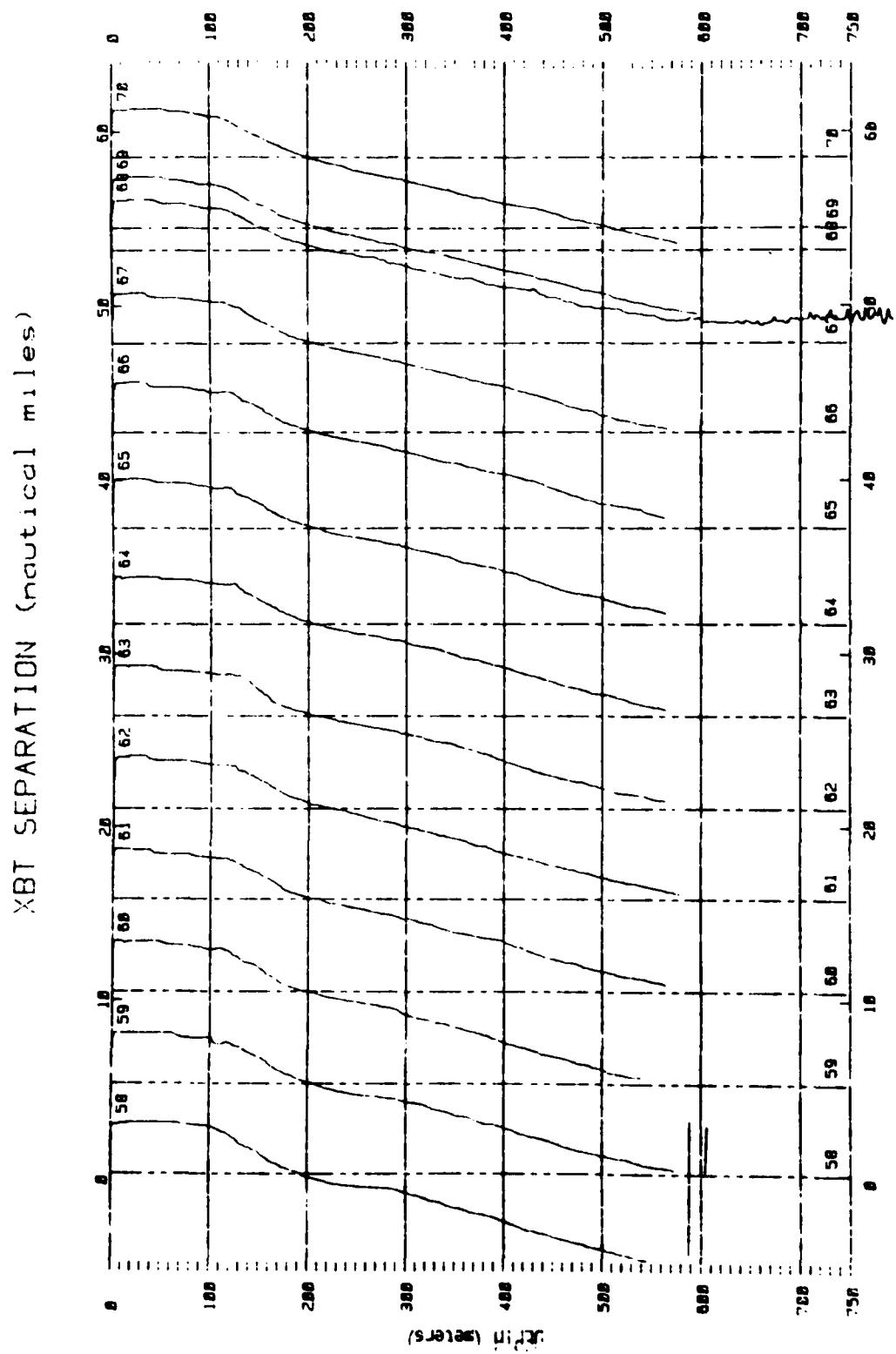


Figure 266.

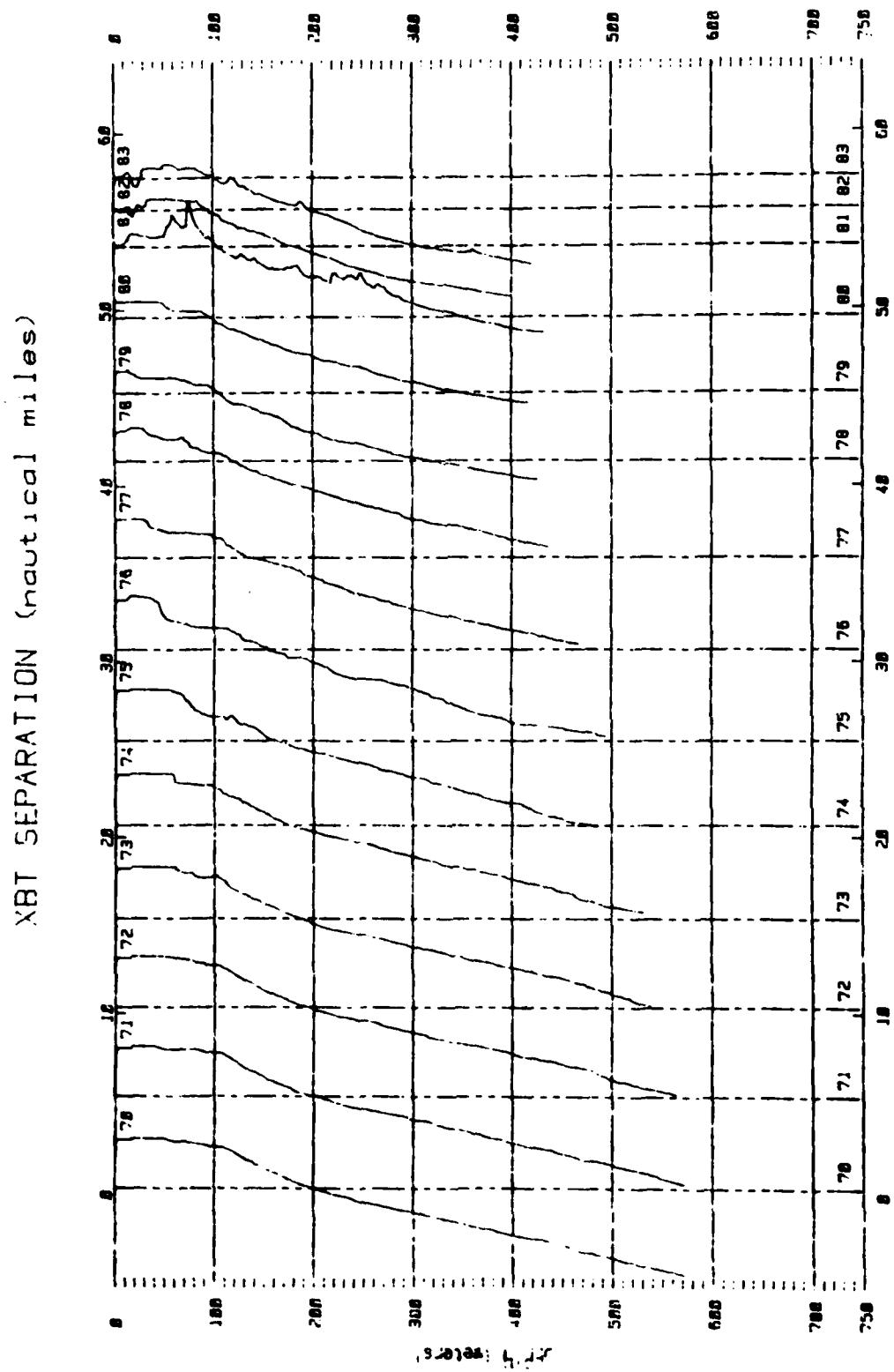


Figure 267.

AD-A098 910 NAVAL OCEAN RESEARCH AND DEVELOPMENT ACTIVITY NSTL S-ETC F/S 8/3
A COMPREHENSIVE GRAPHICAL REPRESENTATION OF DATA OBTAINED IN TH-ETC
OCT 80 K D SAUNDERS, A W GREEN, M T BERGIN

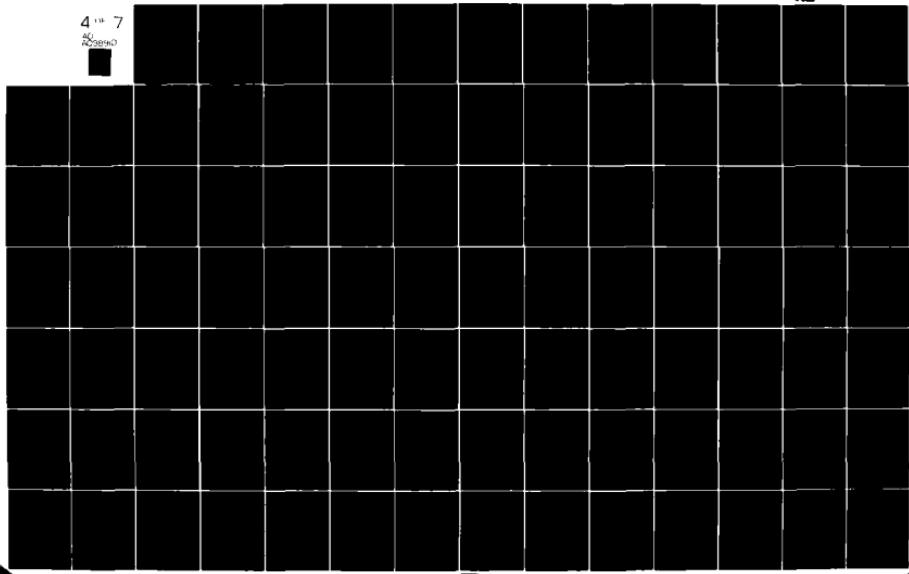
UNCLASSIFIED NORDA-TN-85

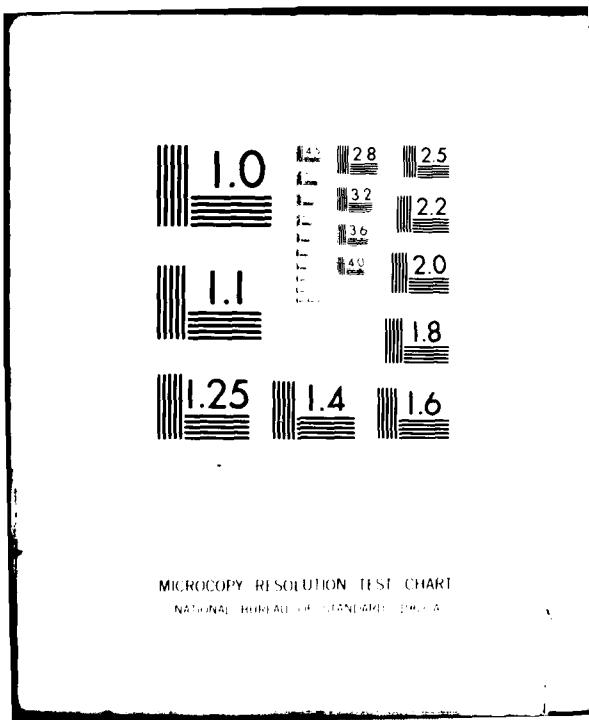
NL

4 10 7

40-38940

[Small black square]





XBT SEPARATION (nautical miles)

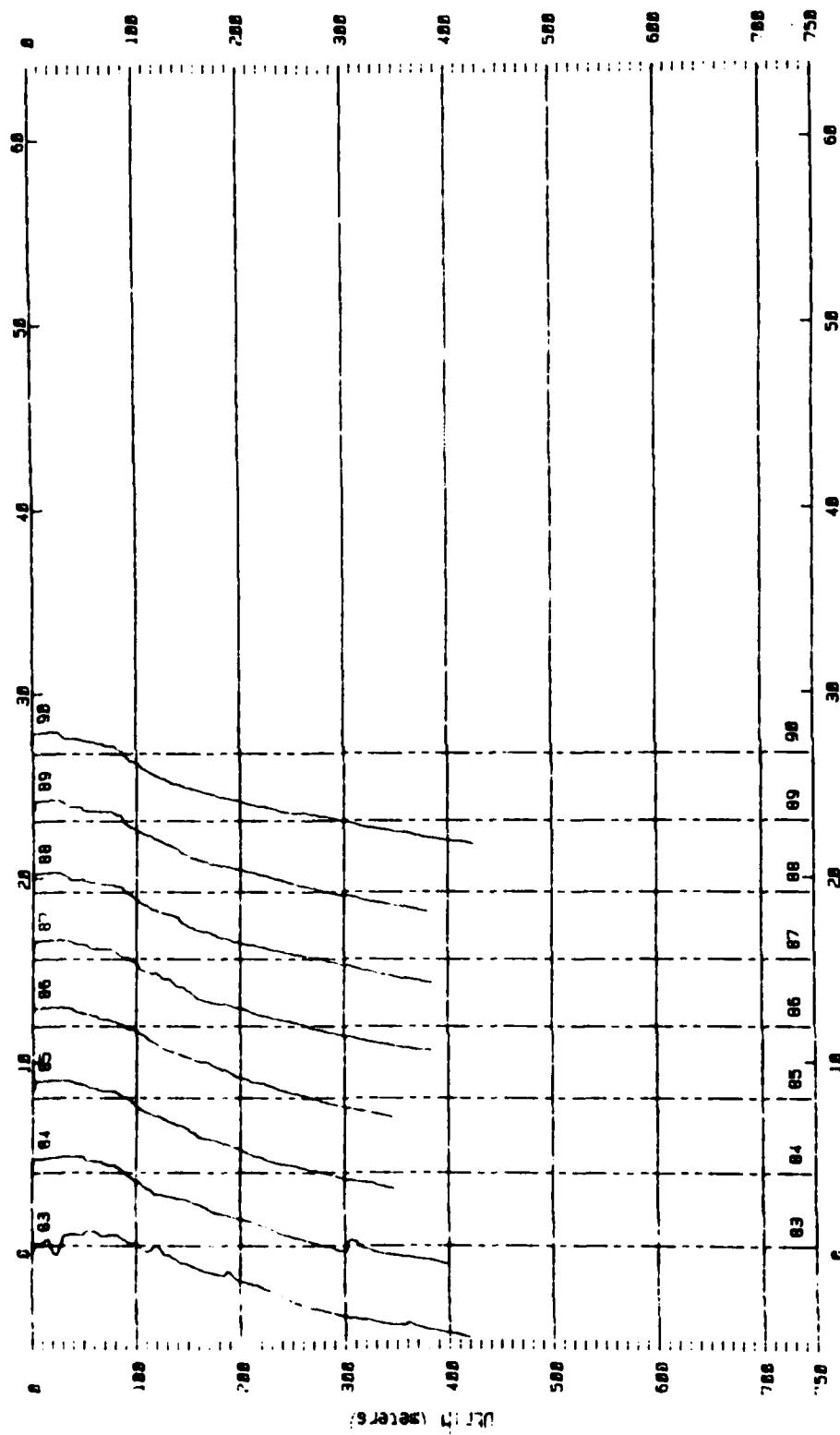


Figure 268.

XBT SEPARATION (nautical miles)

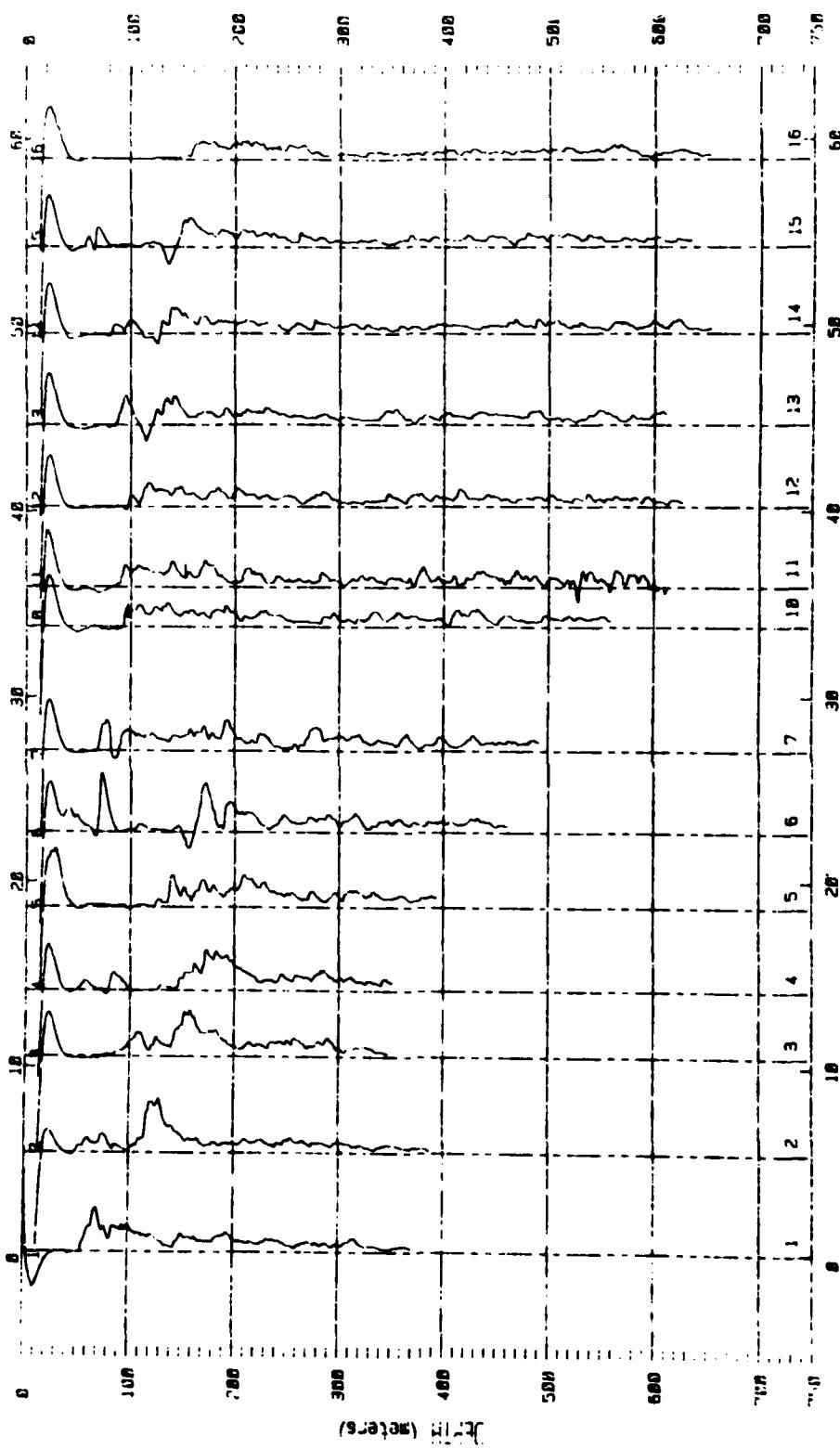


Figure 269.

XBT SEPARATION (nautical miles)

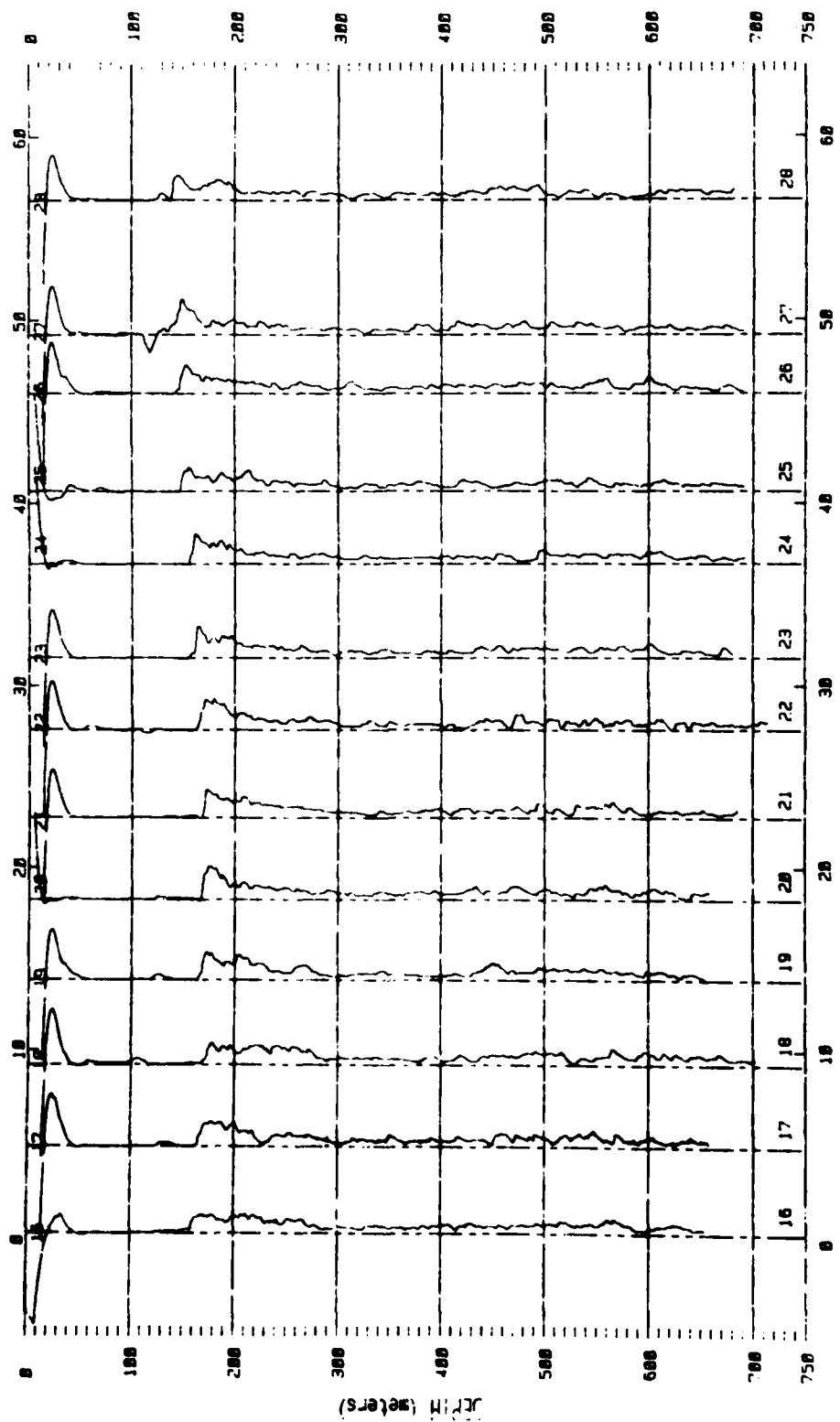


Figure 270.

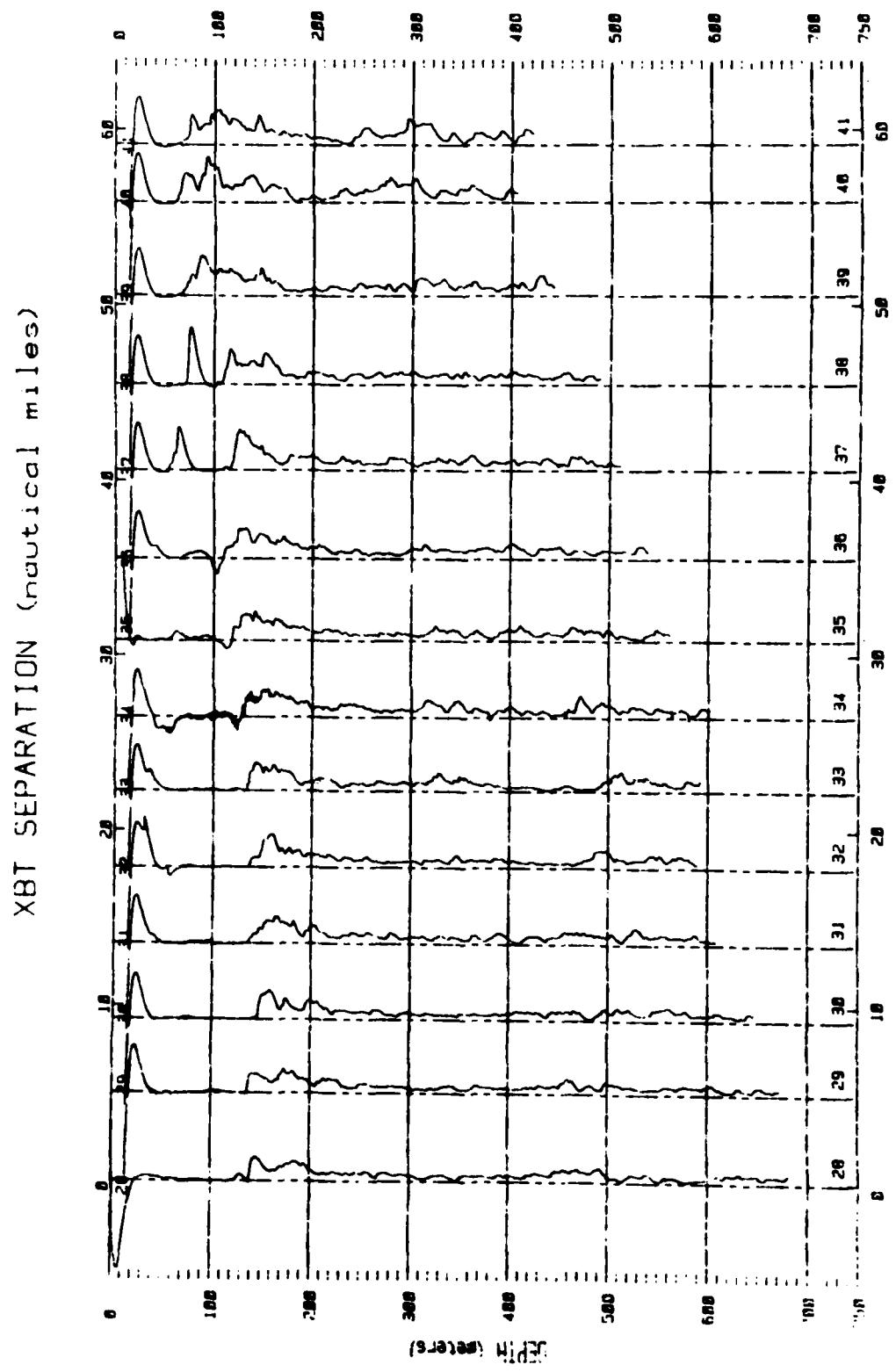


Figure 271.

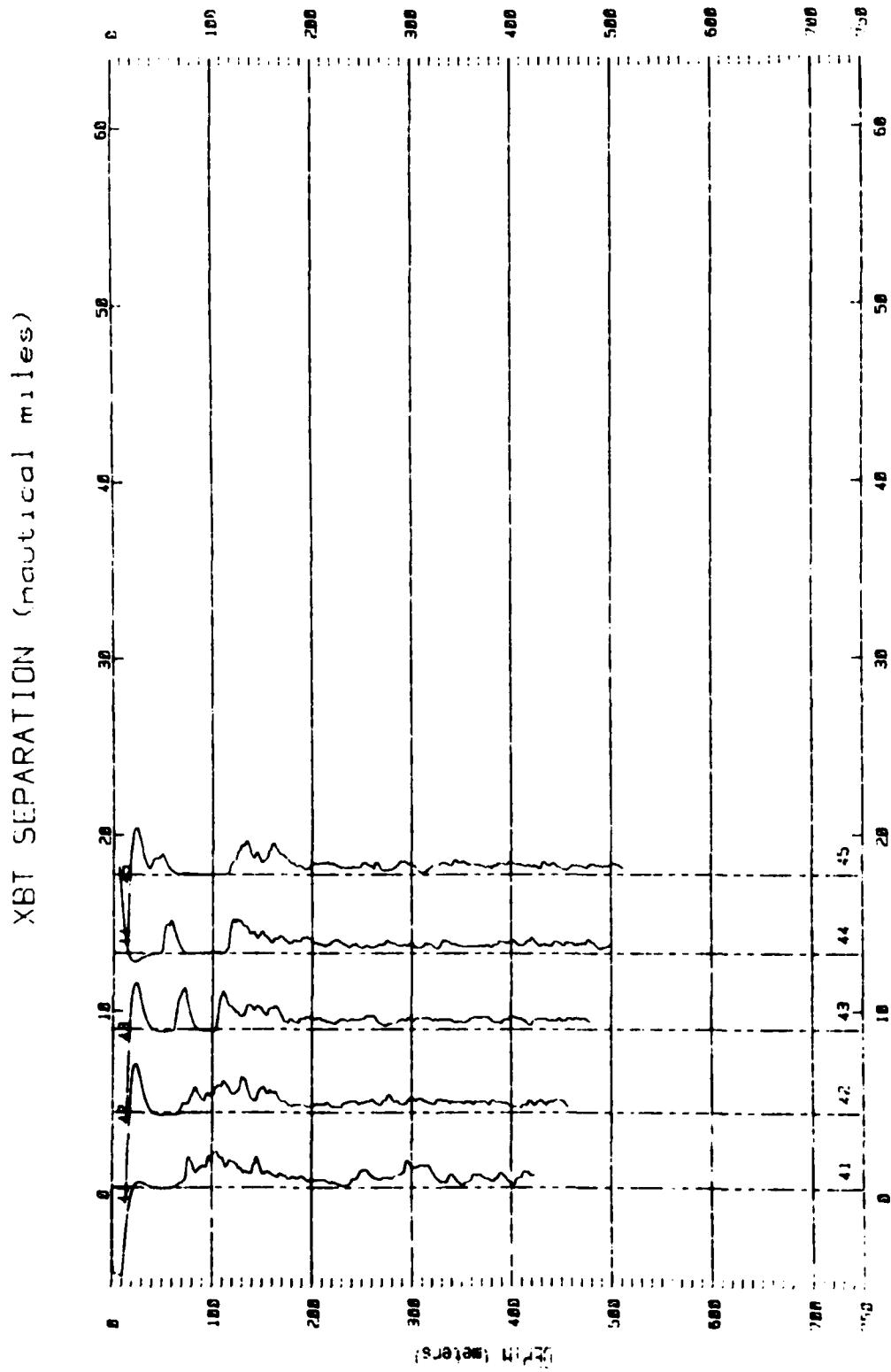


Figure 272.

XBT SEPARATION (nautical miles)

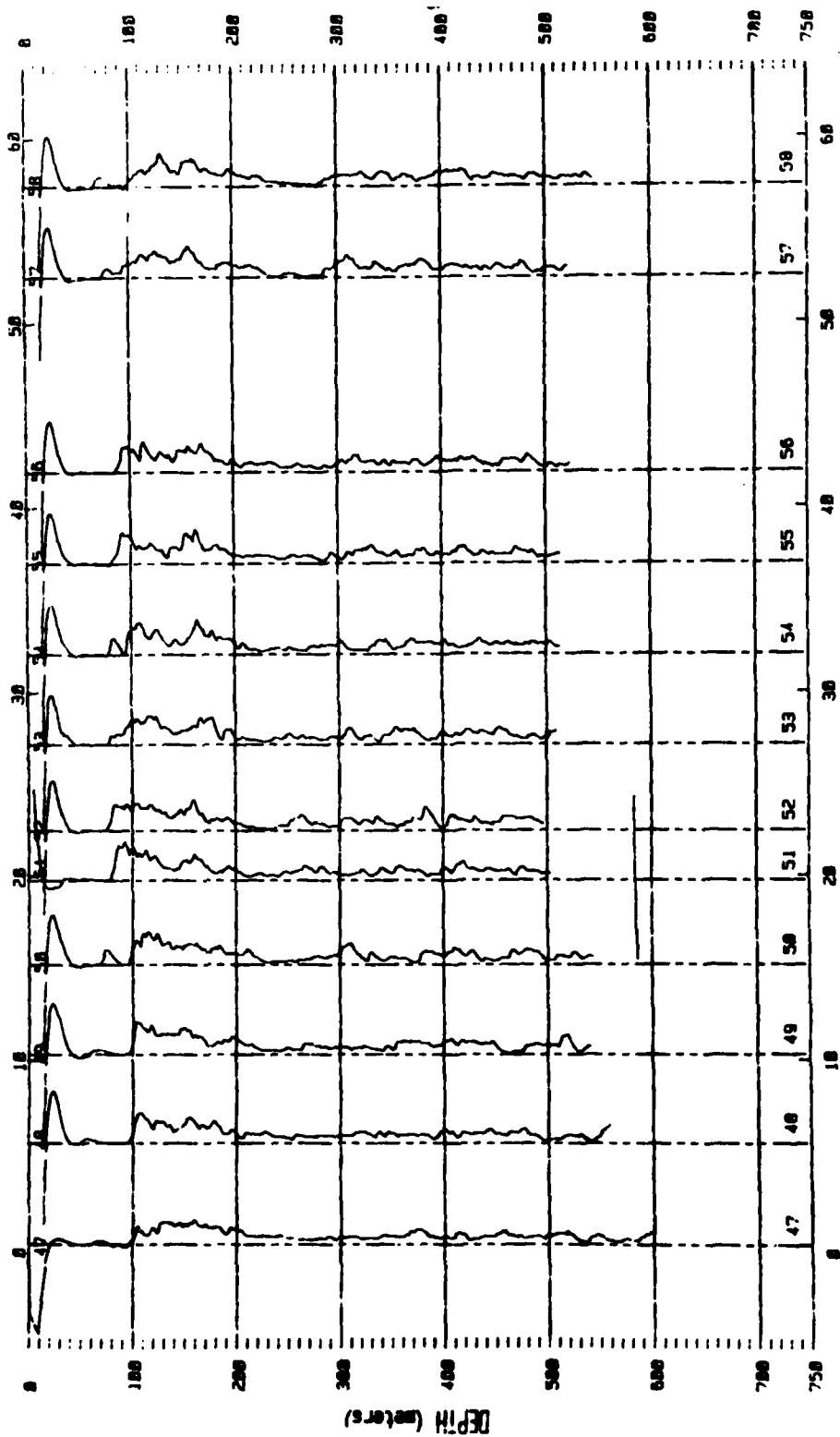


Figure 273.

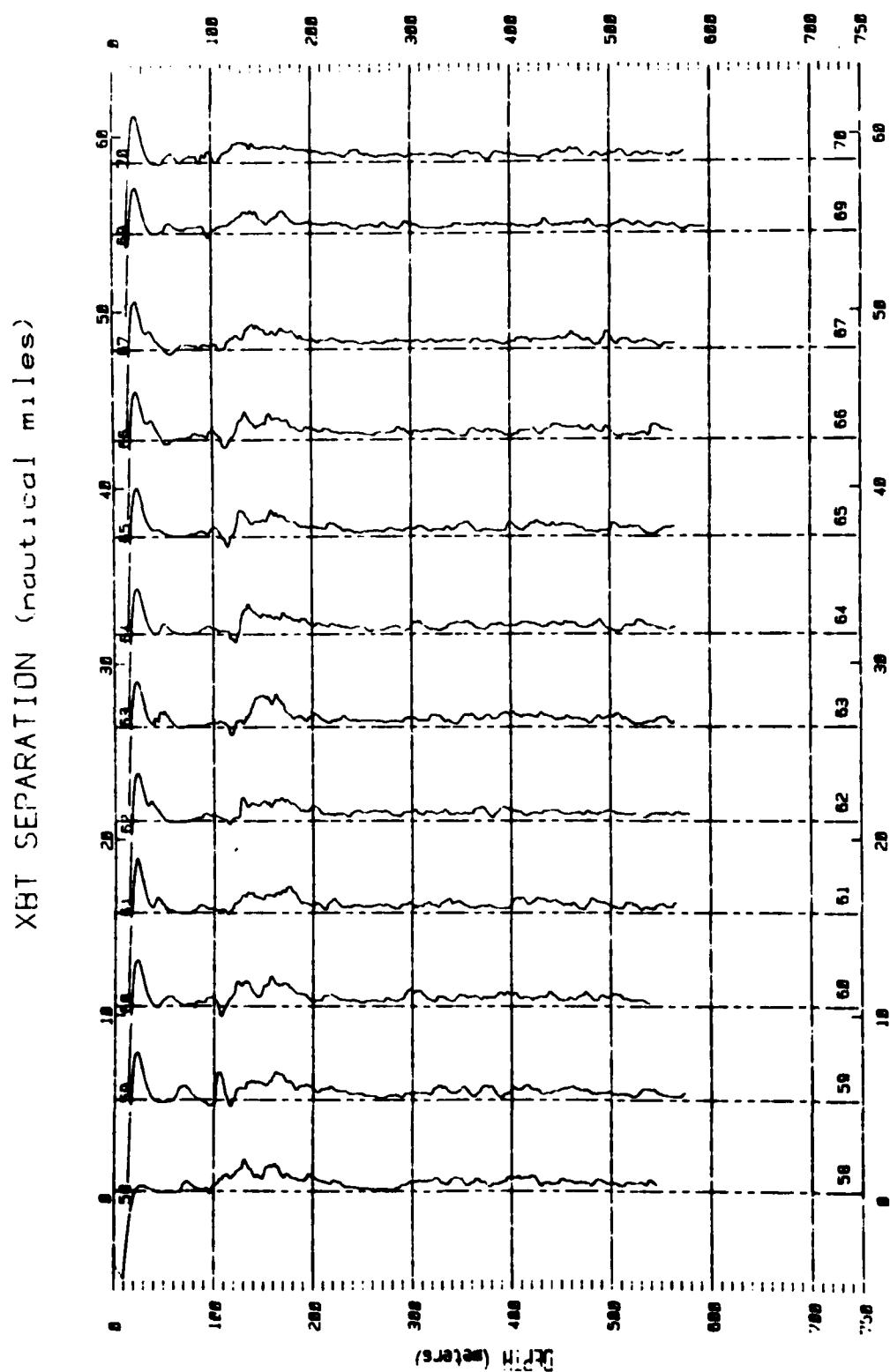


Figure 274.

XBT SEPARATION (nautical miles)

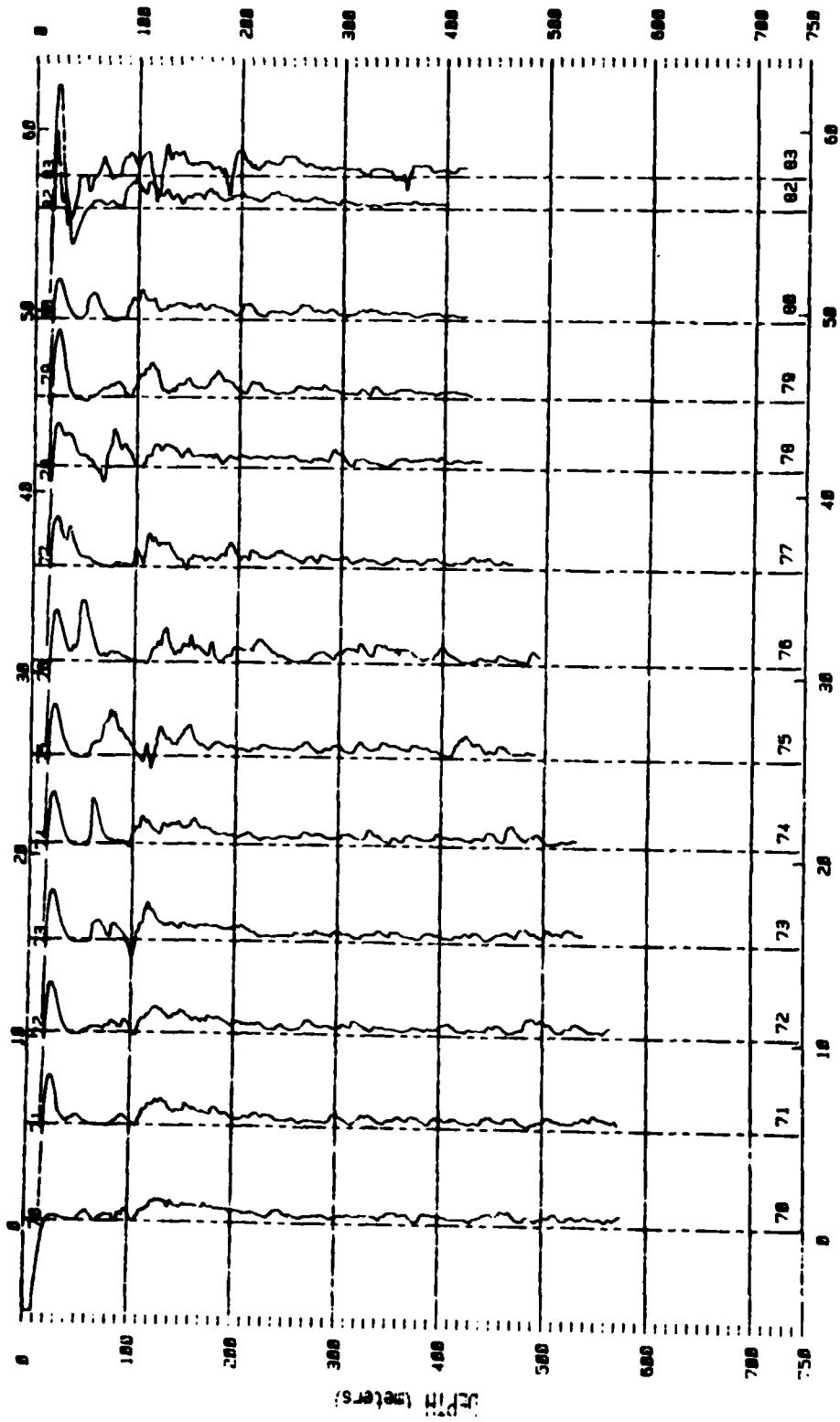


Figure 275.

XBT SEPARATION (nautical miles)

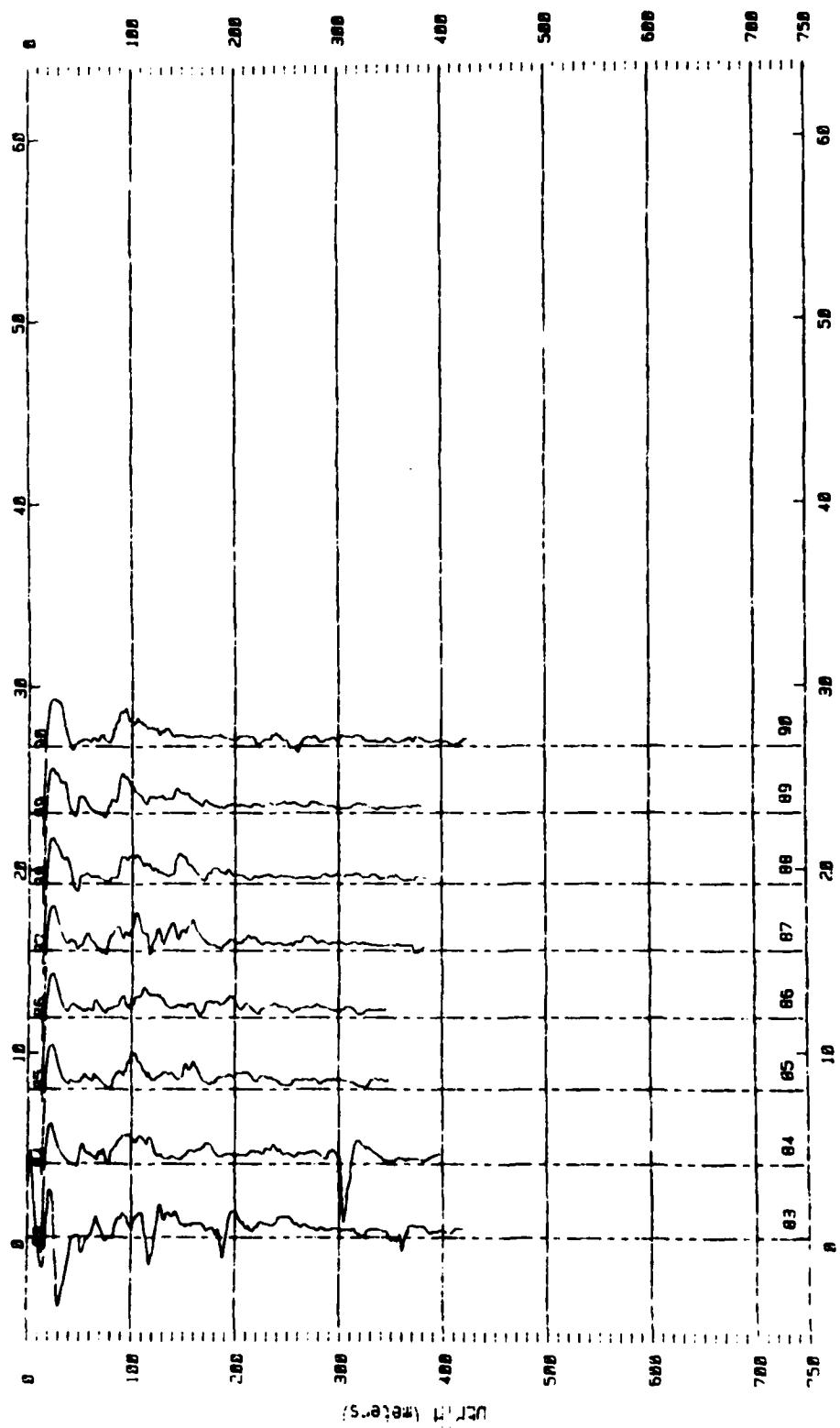


Figure 276.

4.3 CTD Data - Deployment Cruise

4.3.1 Temperature and Salinity vs. Depth (Figures 277-307)

4.3.2 Brunt-Väisälä Frequency and Sigma-t vs. Depth (Figures 308-338)

4.3.3 Temperature vs. Salinity (Figures 339-369)

ATOM 79 DEPLOYMENT
STATION 100001

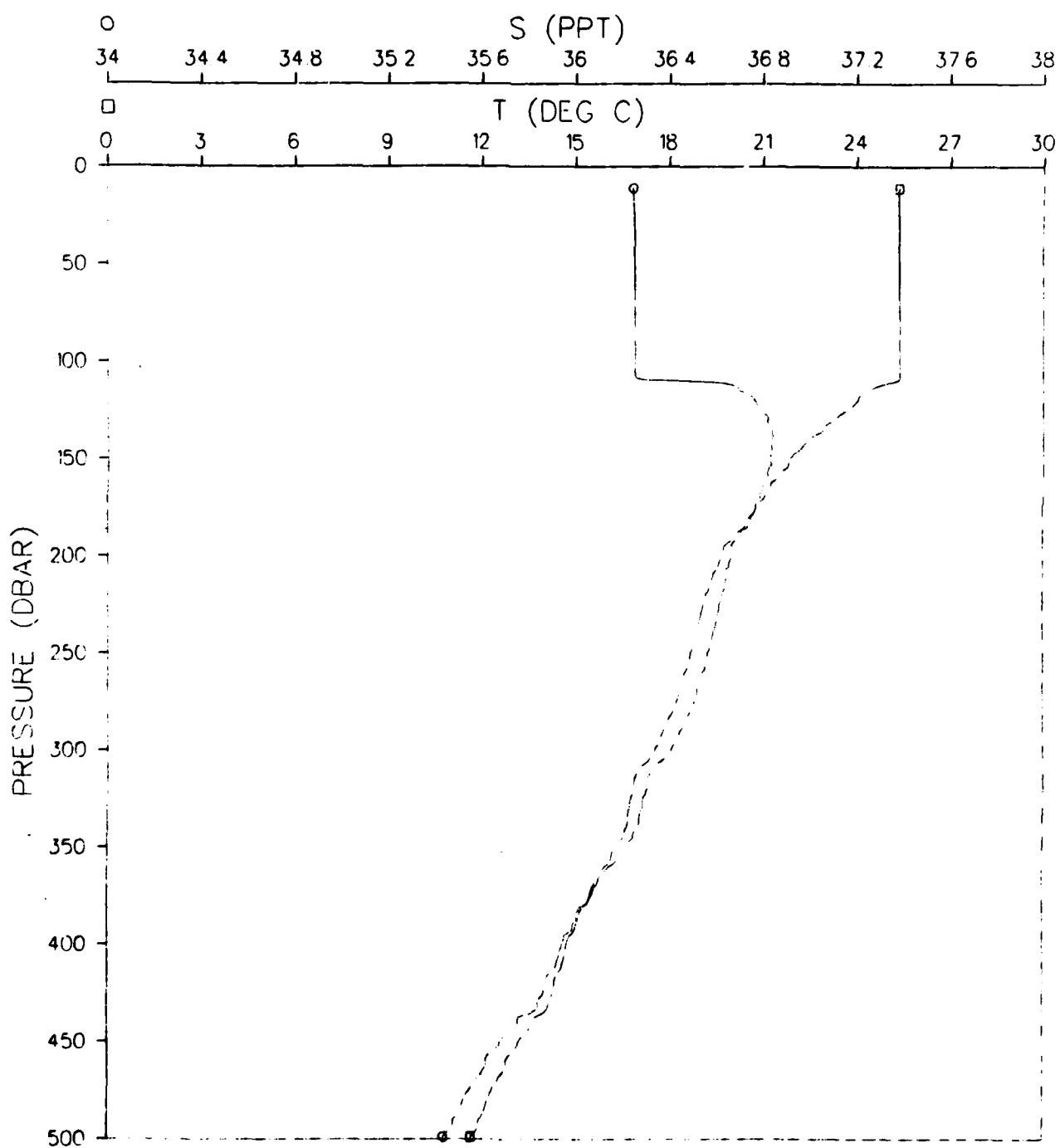


Figure 277.

ATOM 79 DEPLOYMENT
STATION 100005

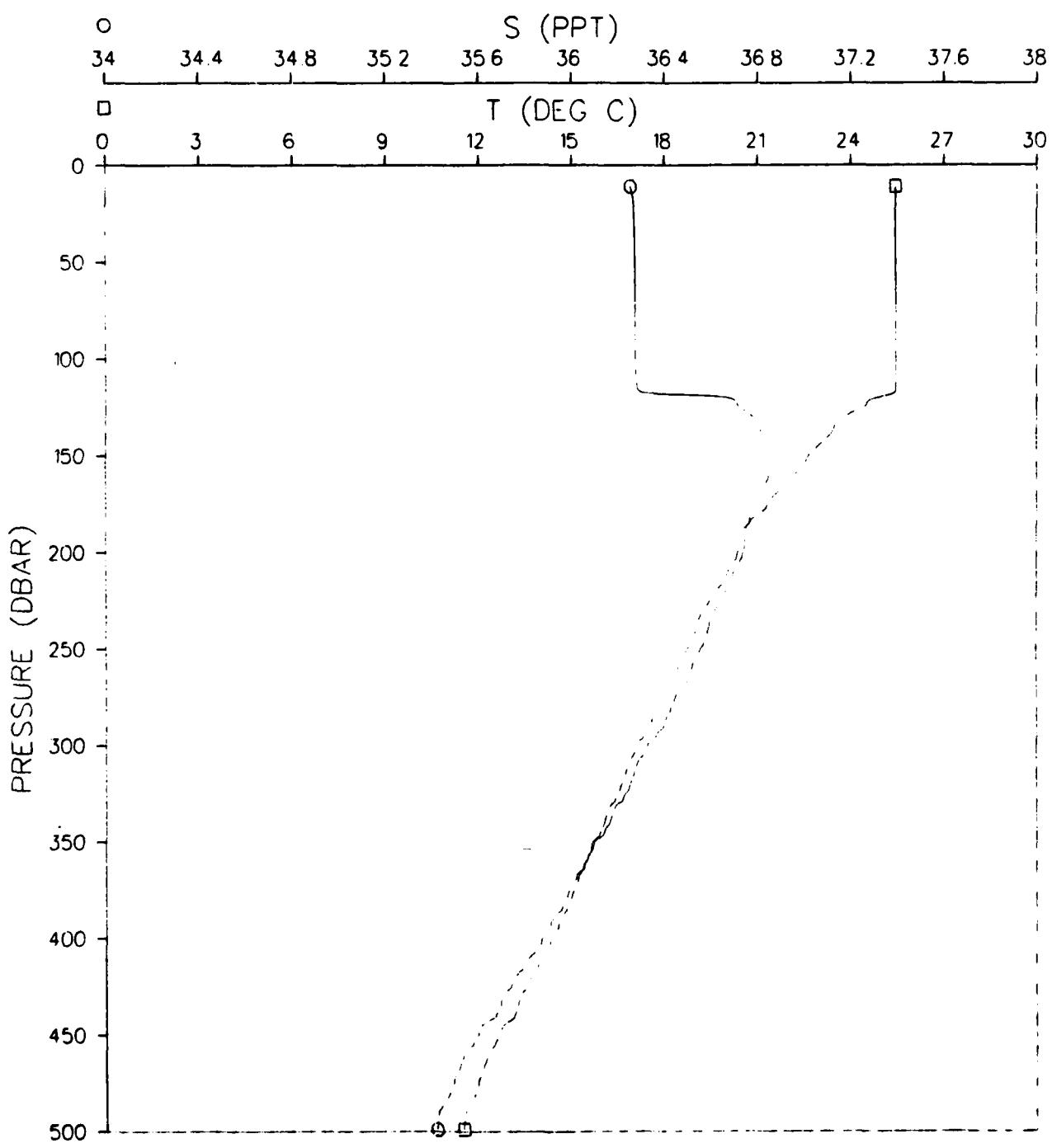


Figure 278.

ATOM 79 DEPLOYMENT
STATION 100006

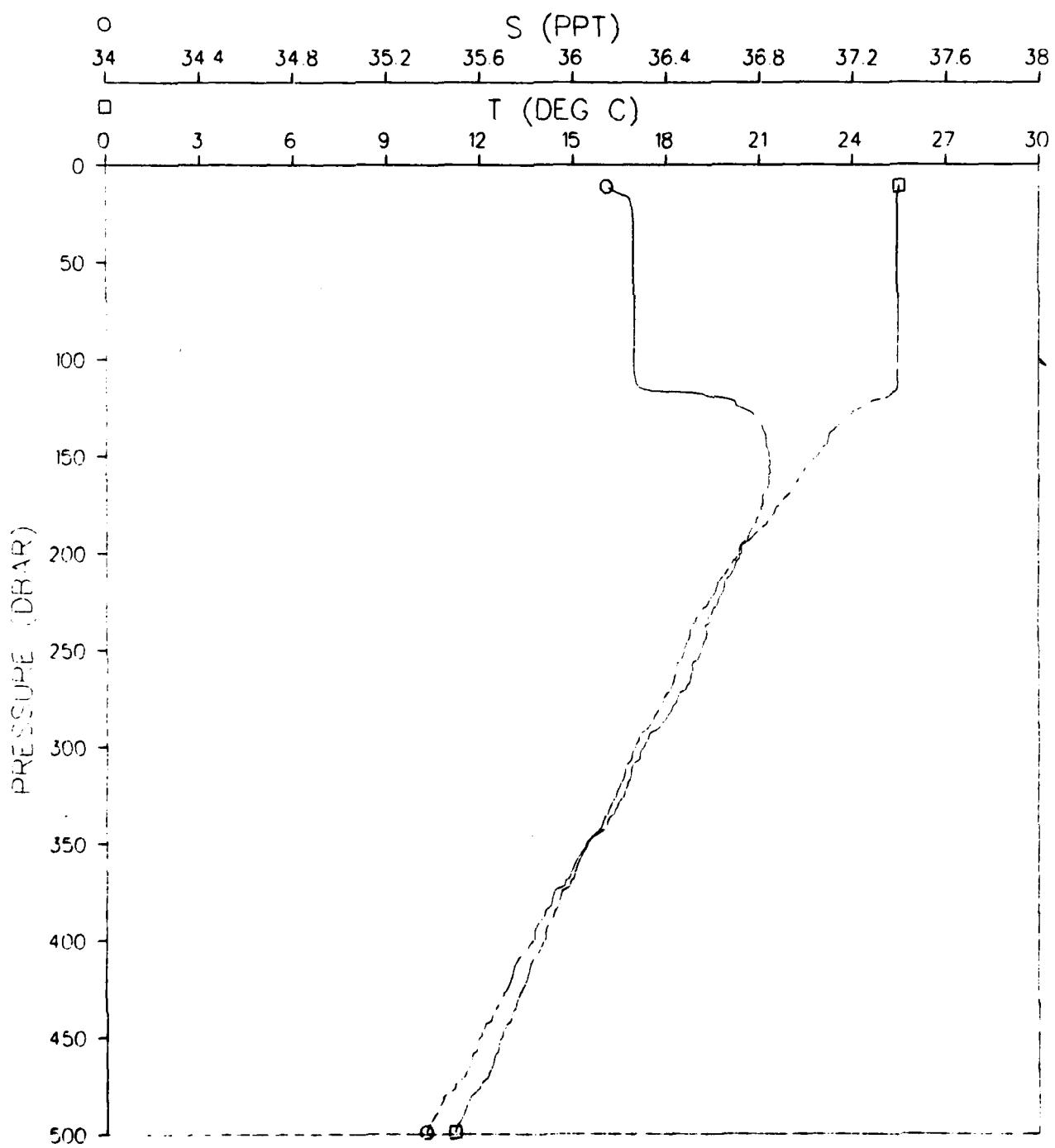


Figure 279.

ATOM 79 DEPLOYMENT
STATION 100007

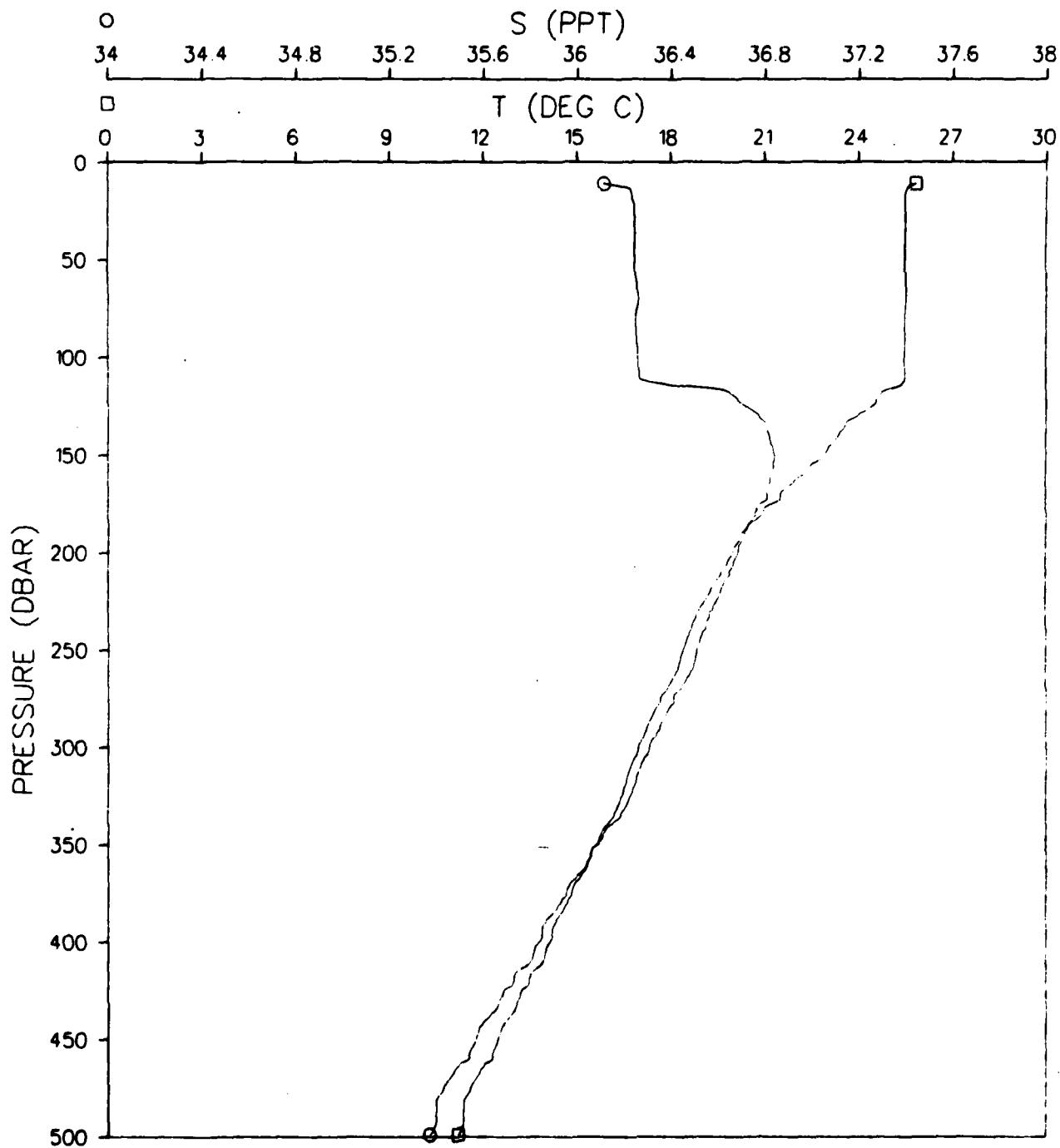


Figure 280.

ATOM 79 DEPLOYMENT
STATION 100008

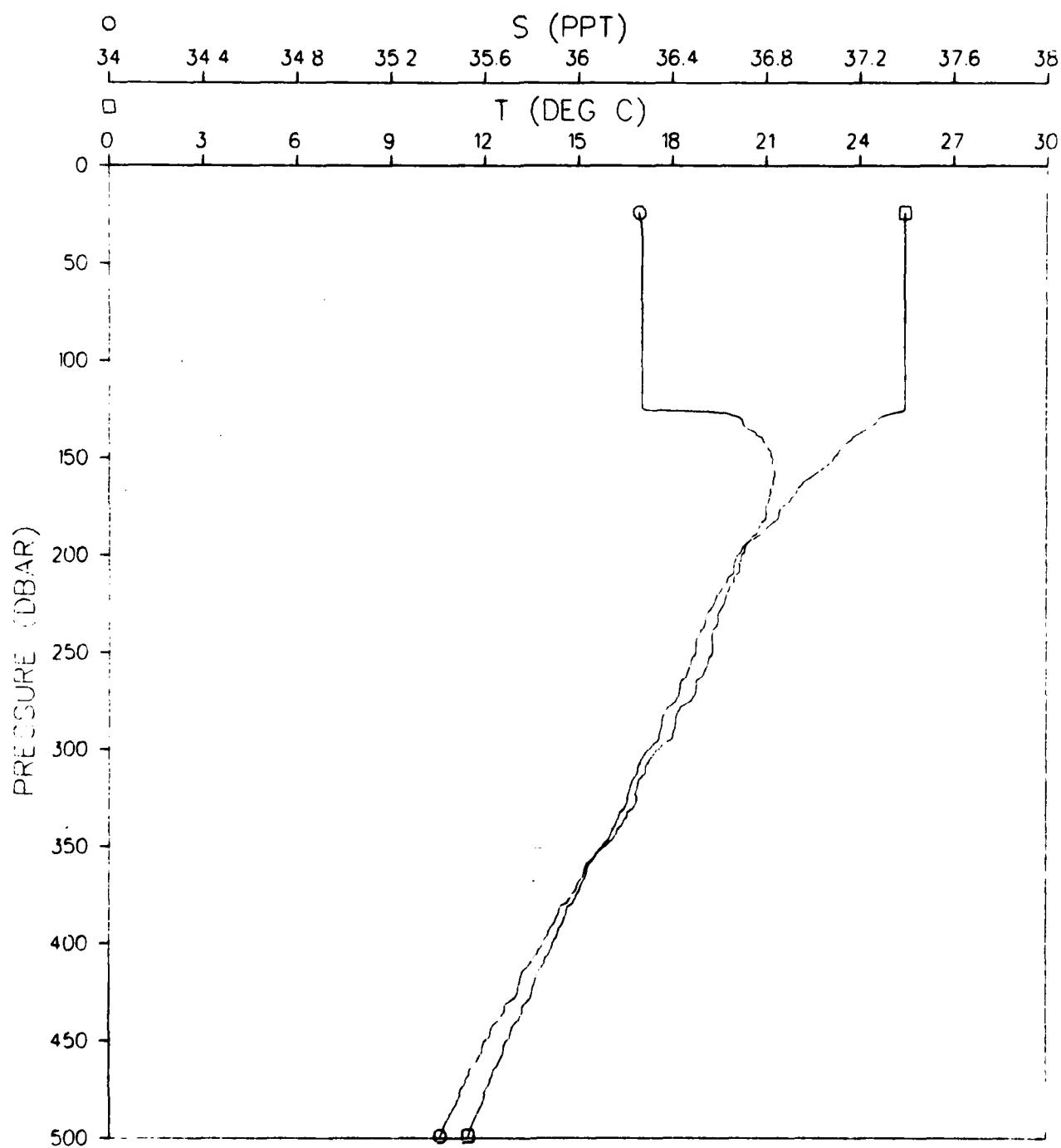


Figure 281.

ATOM 79 DEPLOYMENT
STATION 100009

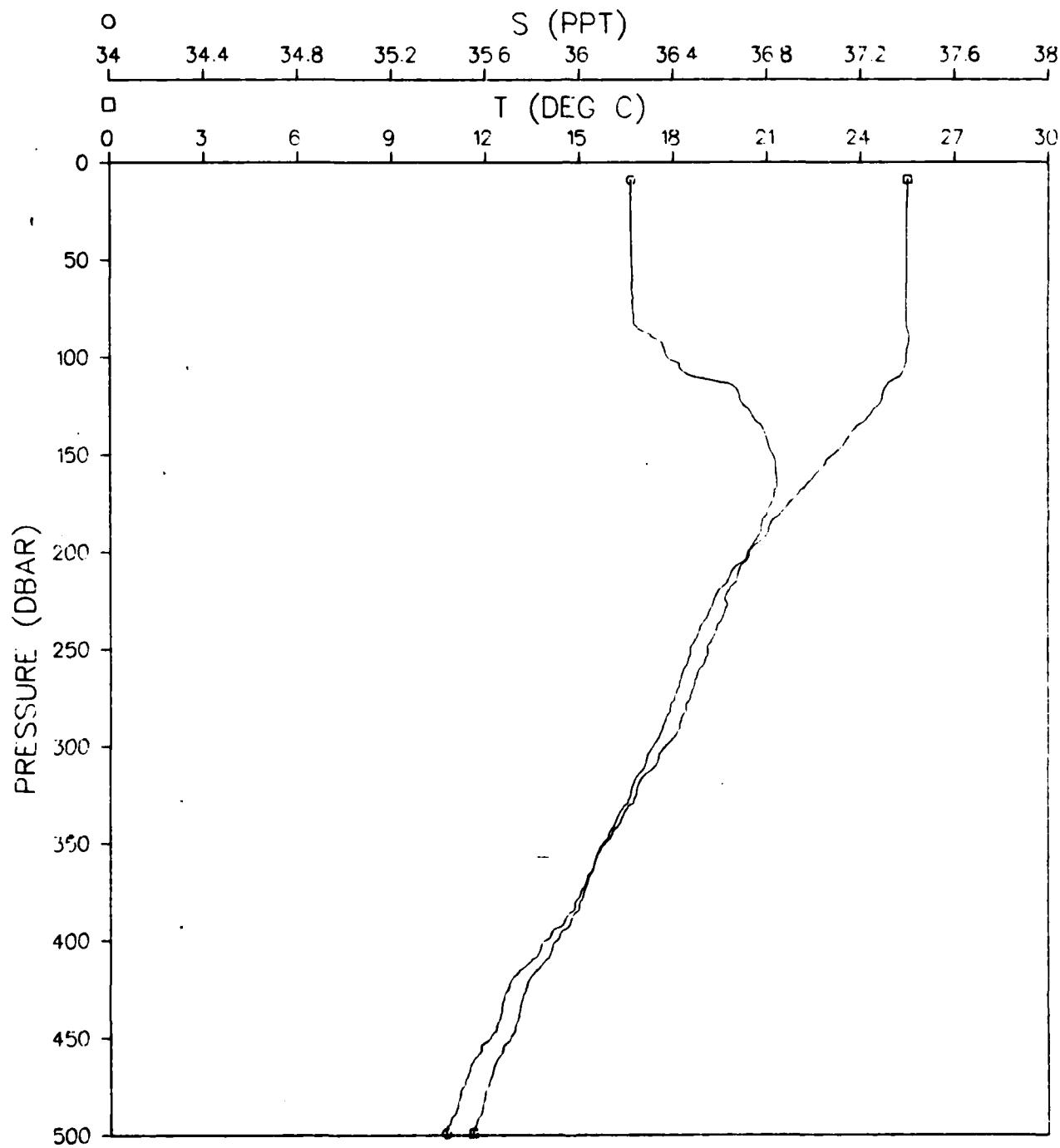


Figure 282.

ATOM 79 DEPLOYMENT
STATION 100010

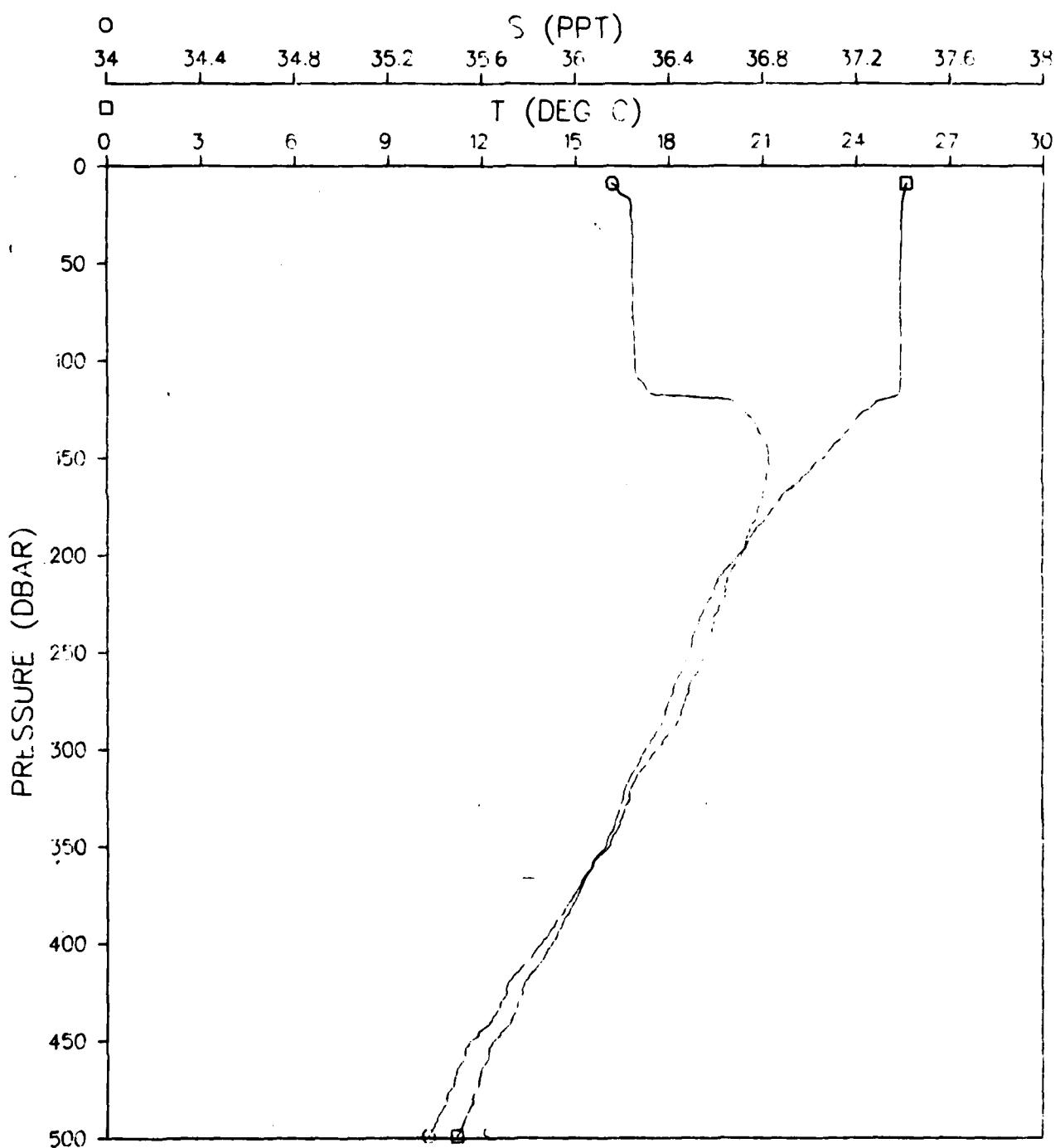


Figure 283.

ATOM 79 DEPLOYMENT
STATION 100011

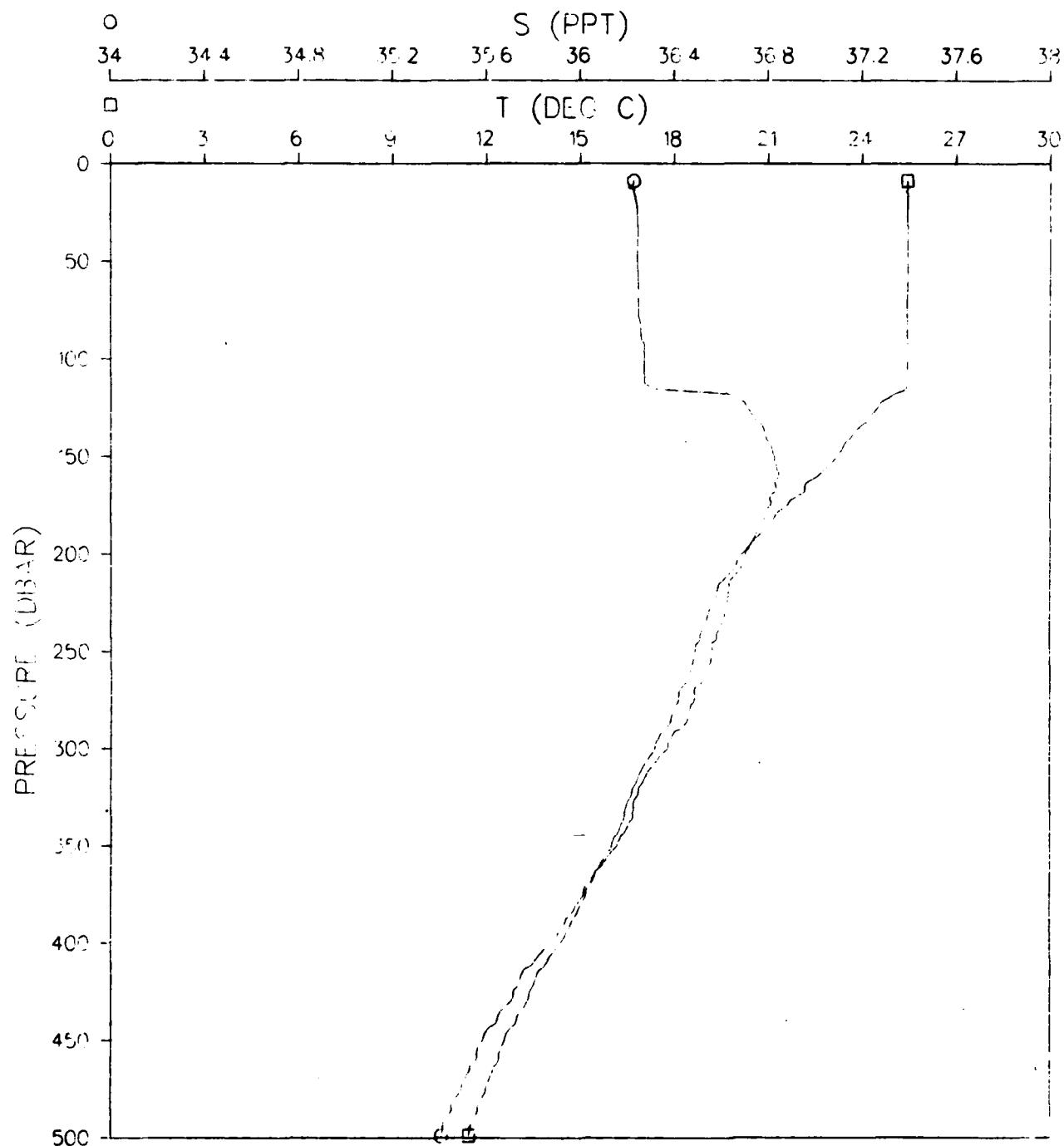


Figure 284.

ATOM 79 DEPLOYMENT
STATION 100012

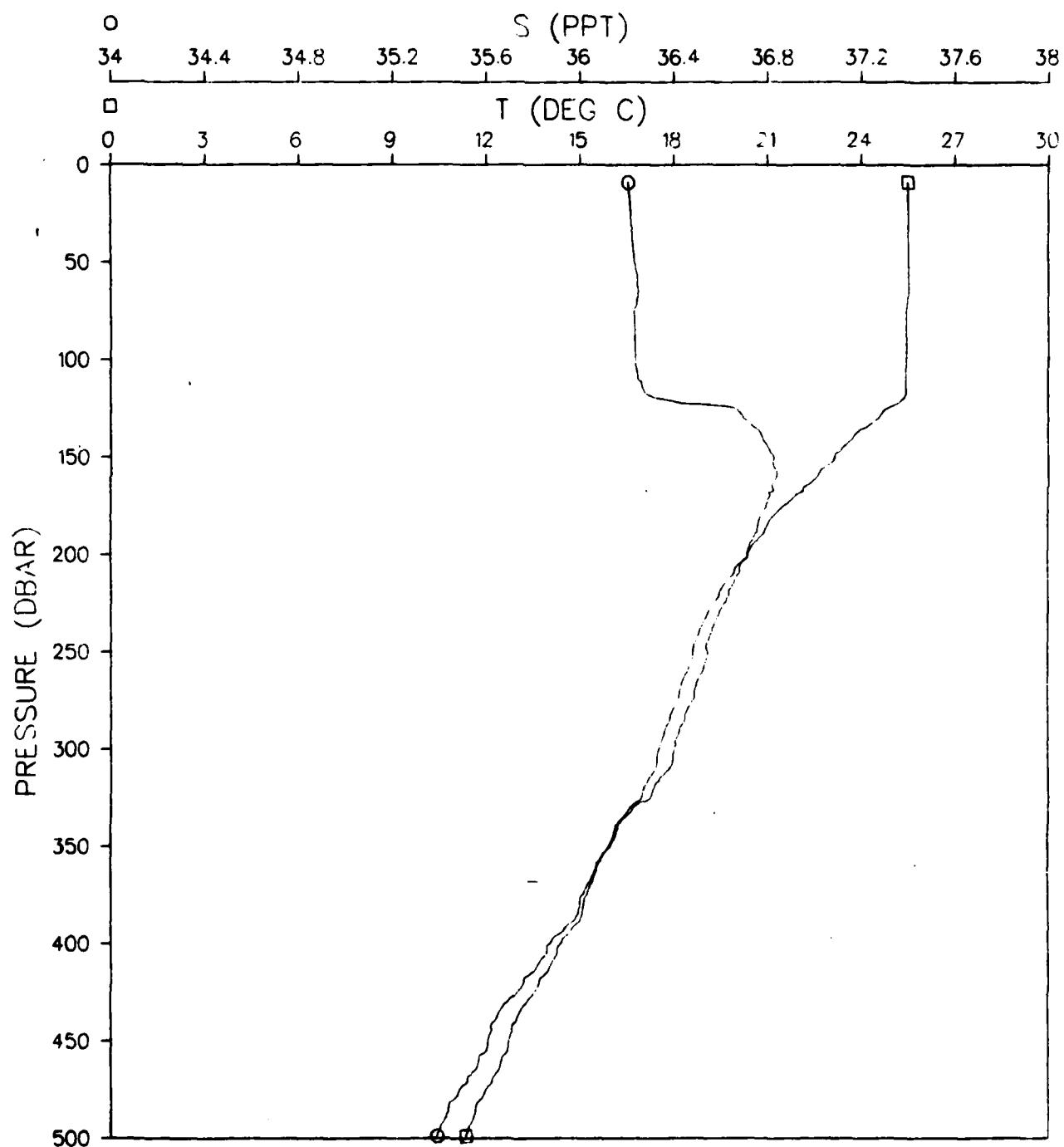


Figure 285.

ATOM 79 DEPLOYMENT
STATION 100013

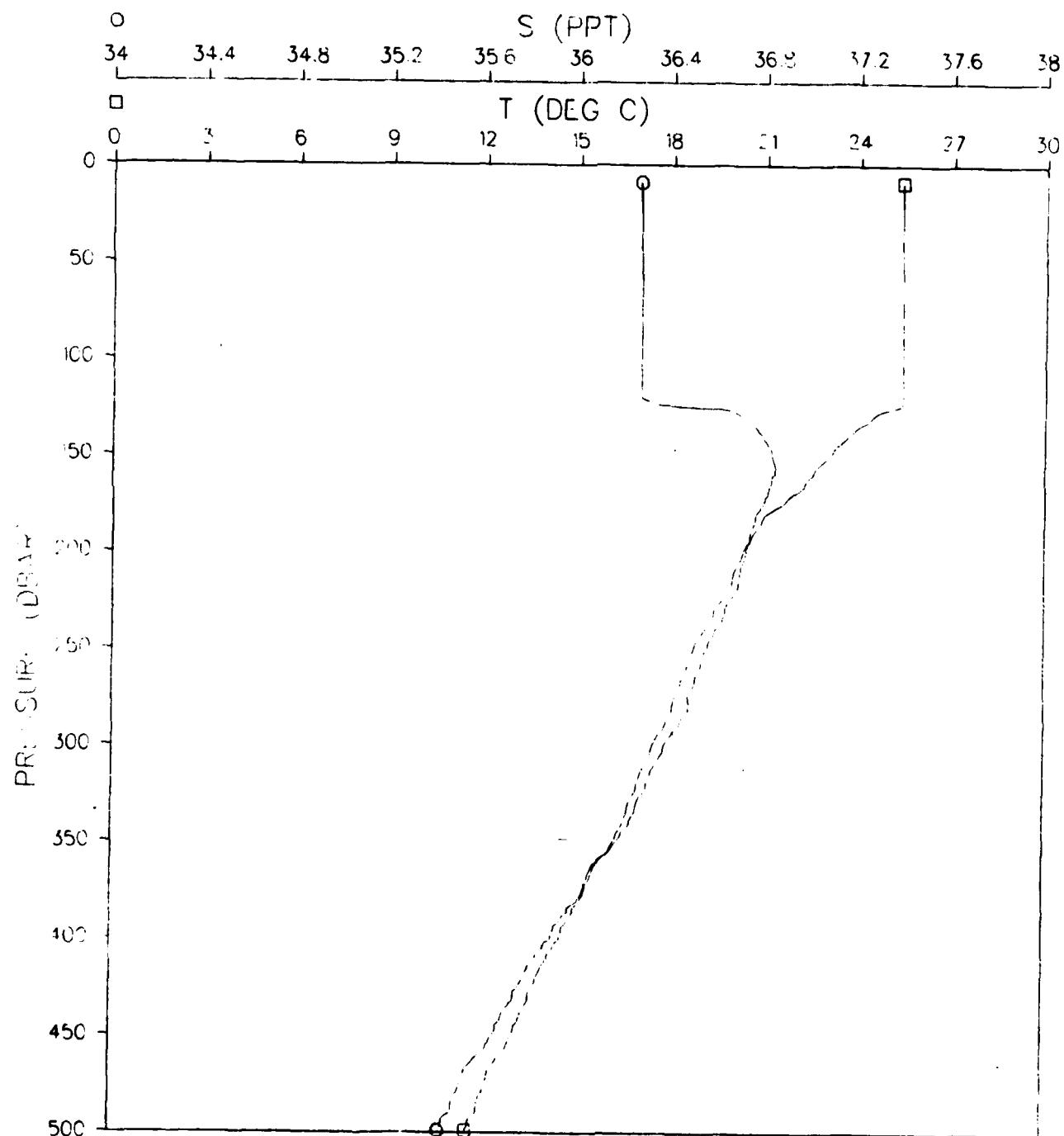


Figure 286.

ATOM 79 DEPLOYMENT
STATION 100014

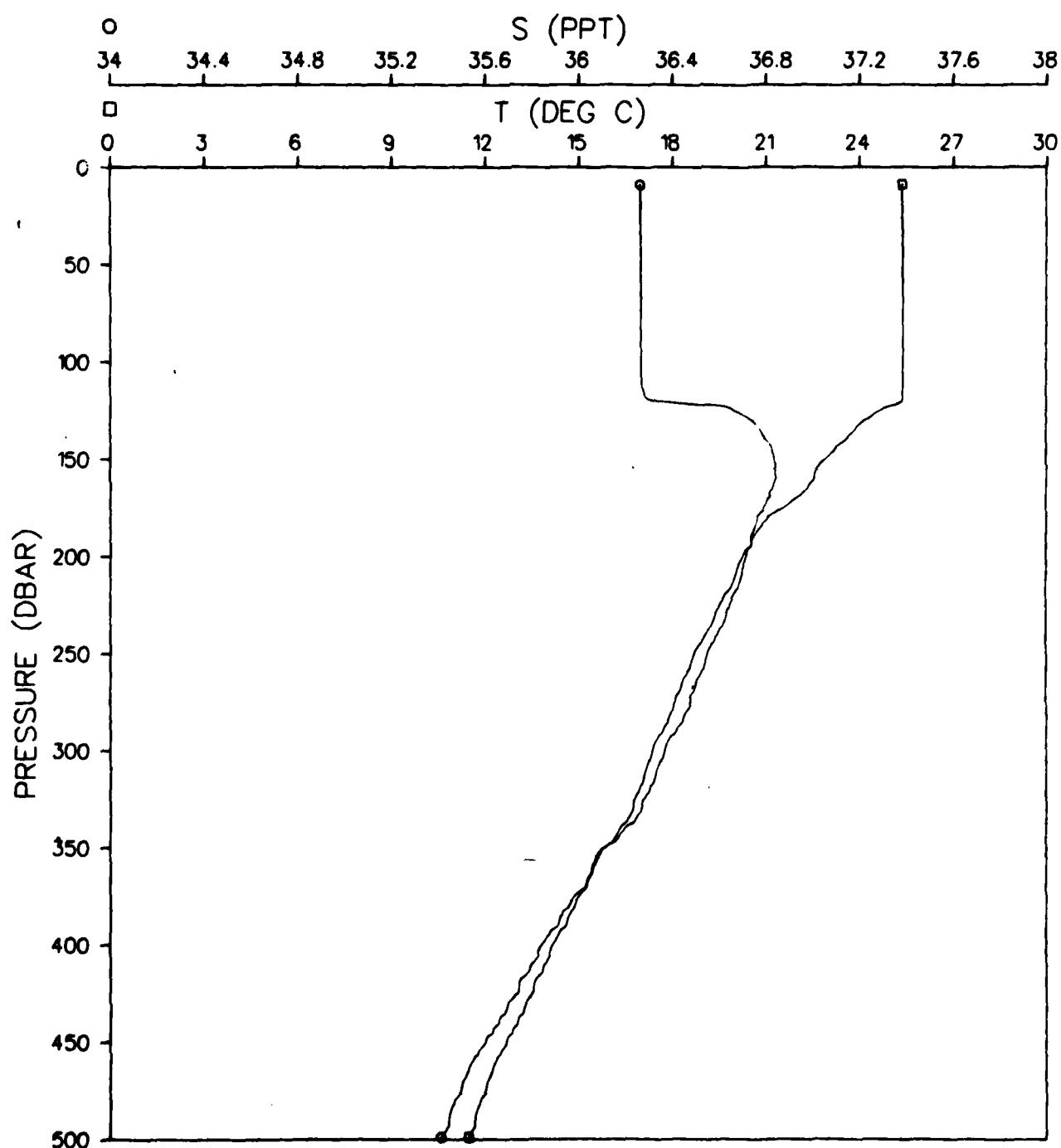


Figure 287.

ATOM 79 DEPLOYMENT
STATION 100016

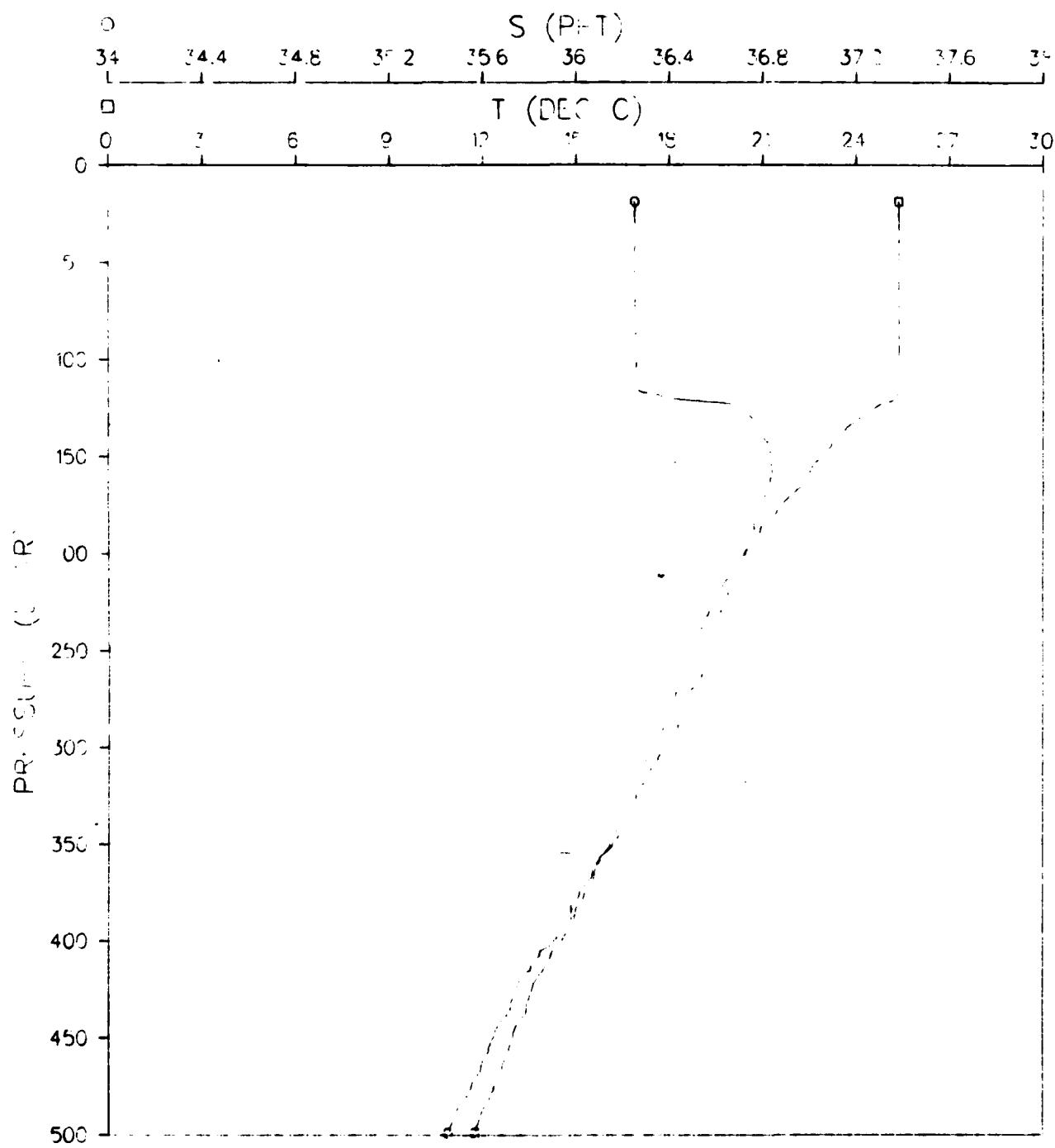


Figure 288.

ATOM 79 DEPLOYMENT
STATION 100016

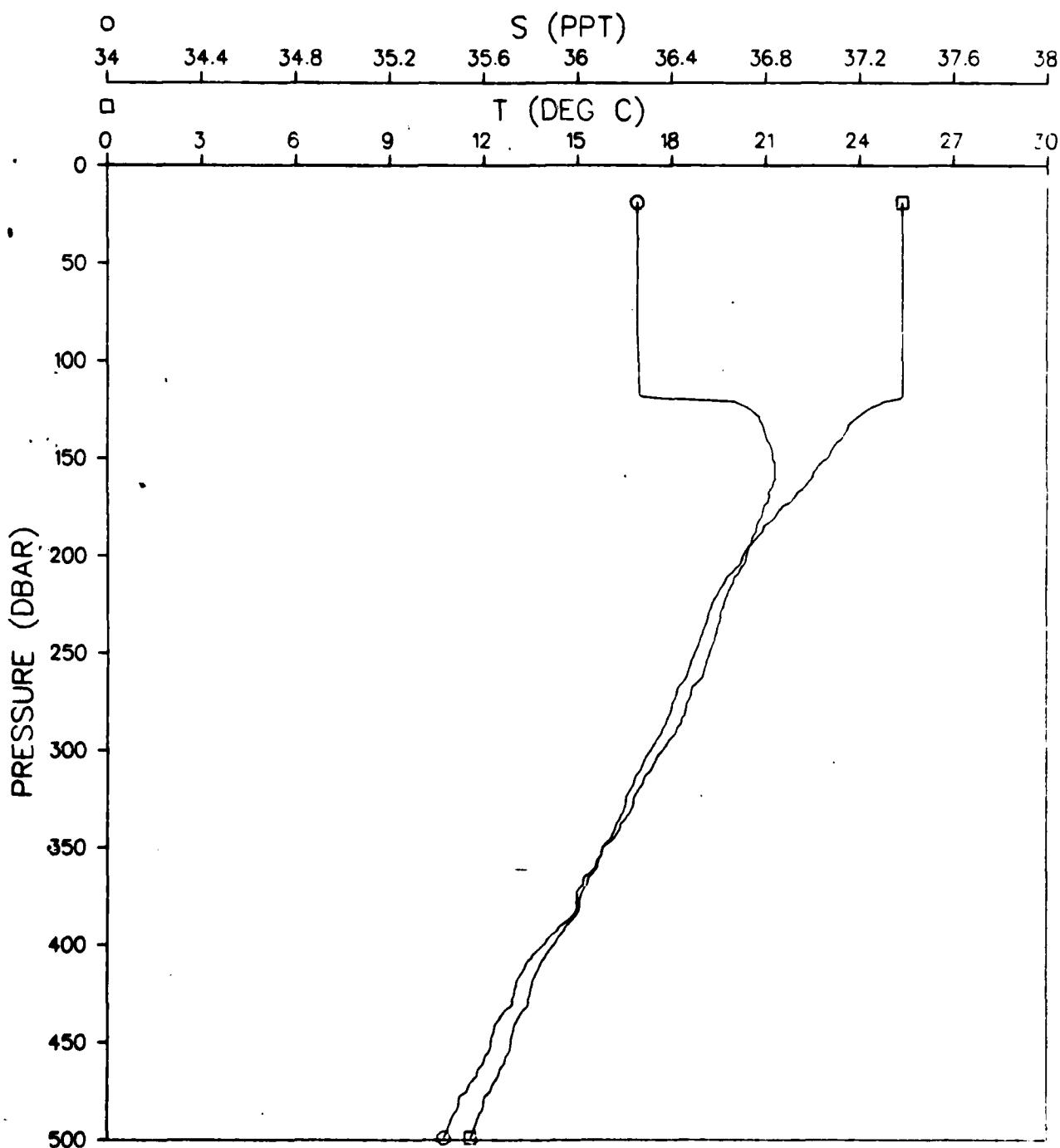


Figure 289.

ATOM 79 DEPLOYMENT
STATION 100017

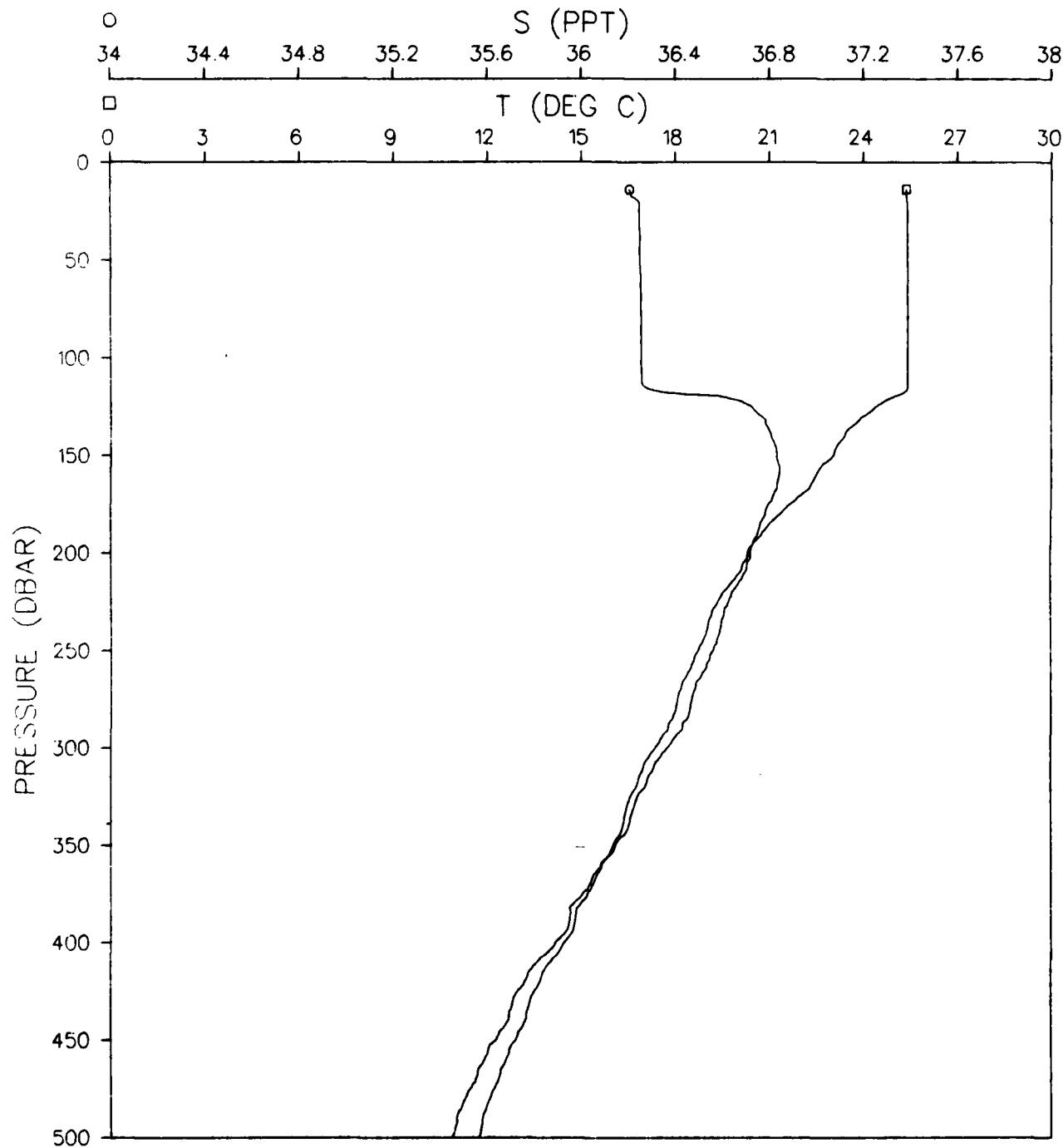


Figure 290.

ATOM 79 DEPLOYMENT
STATION 100018

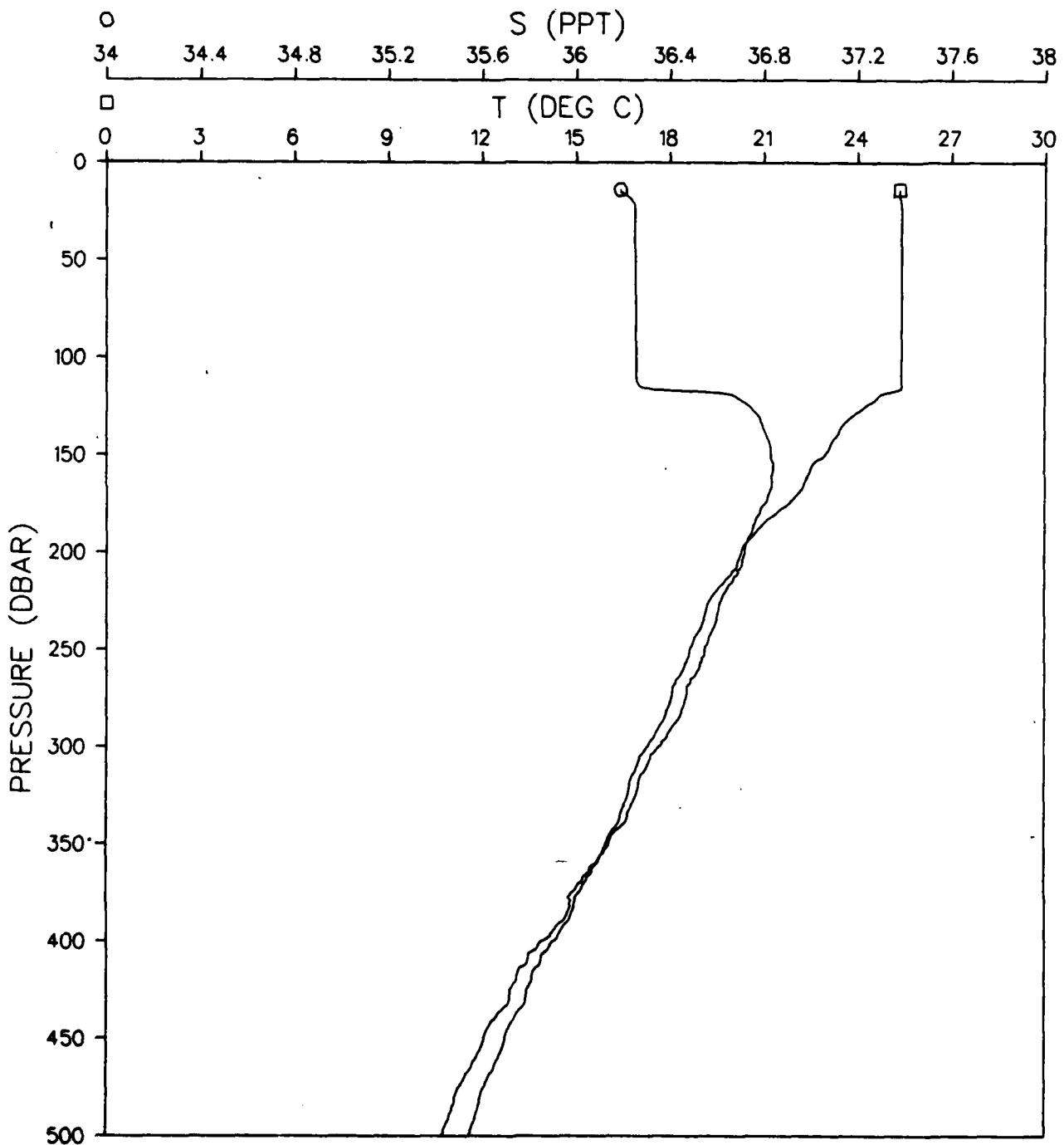


Figure 291.

ATOM 79 DEPLOYMENT
STATION 100019

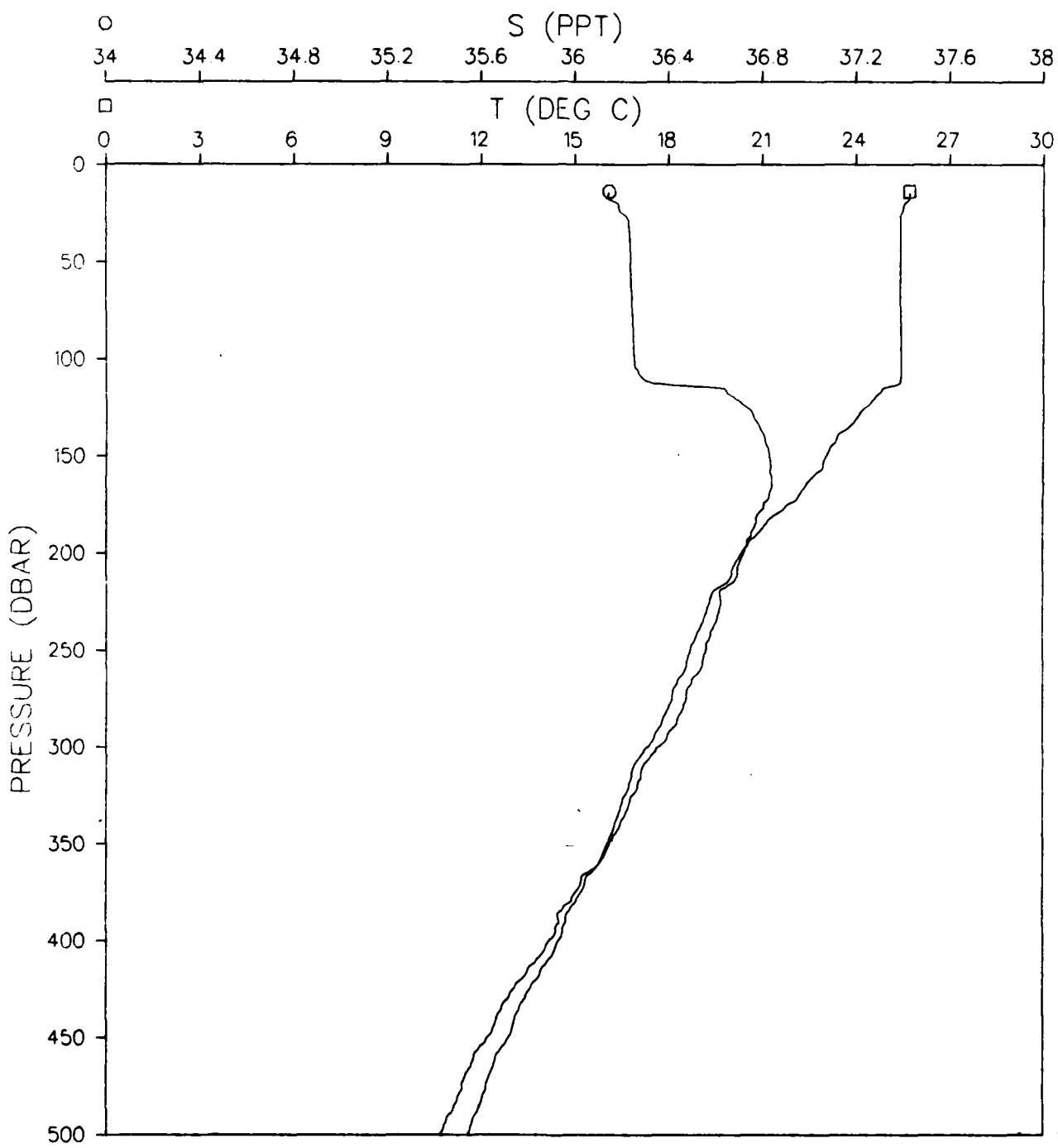


Figure 292.

ATOM 79 DEPLOYMENT
STATION 100020

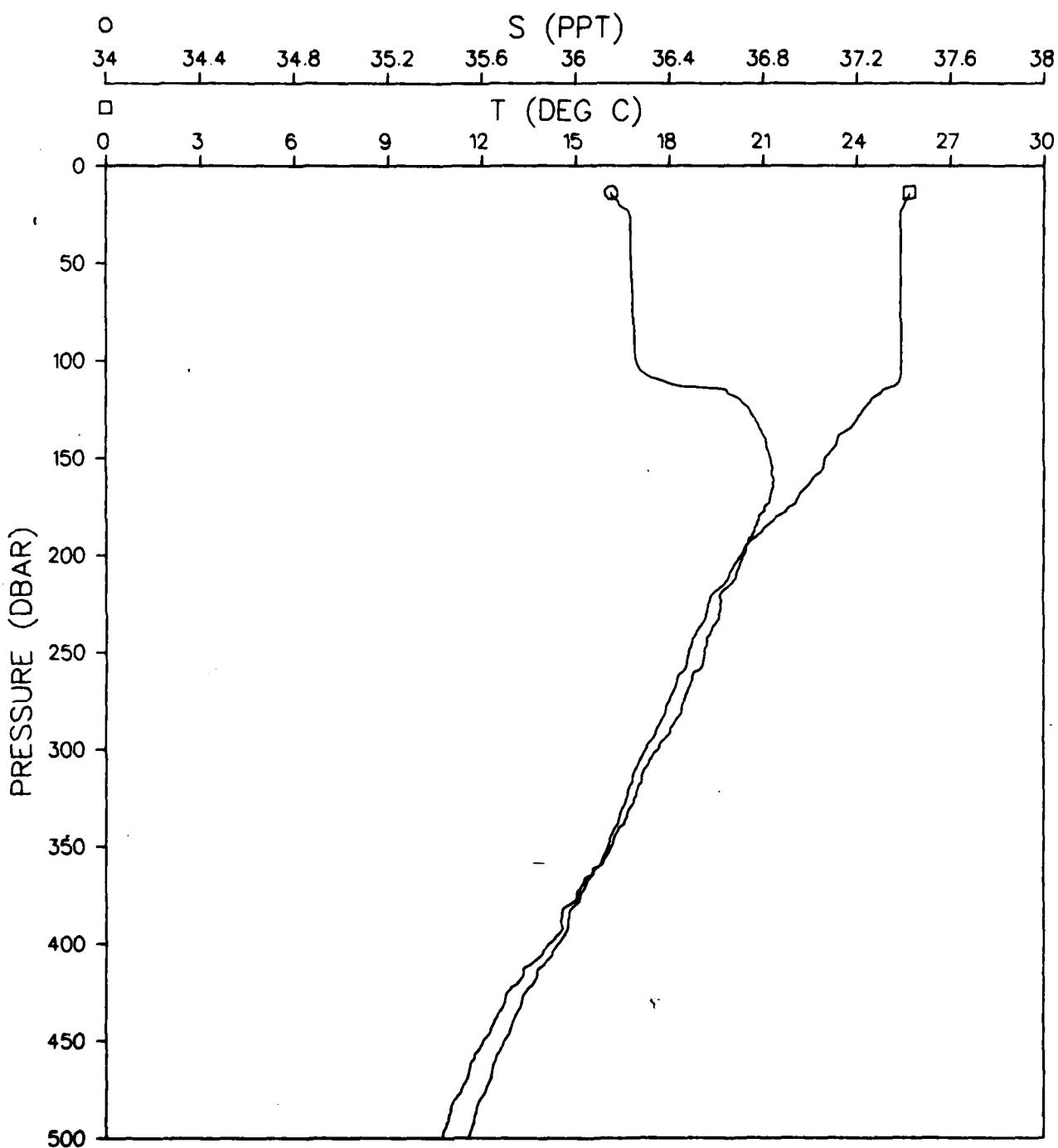


Figure 293.

ATOM 79 DEPLOYMENT
STATION 100021

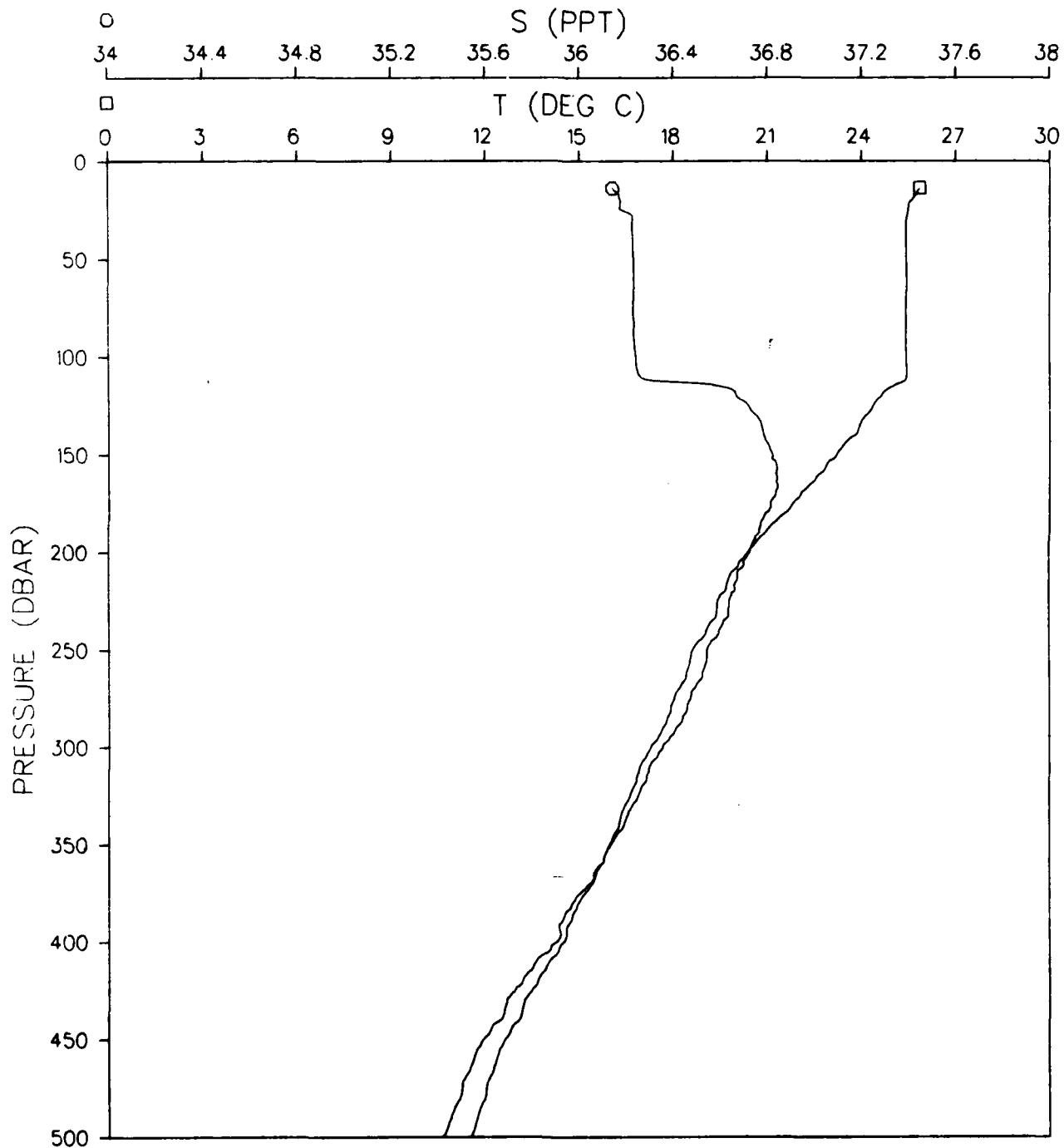


Figure 294.

ATOM 79 DEPLOYMENT
STATION 100022

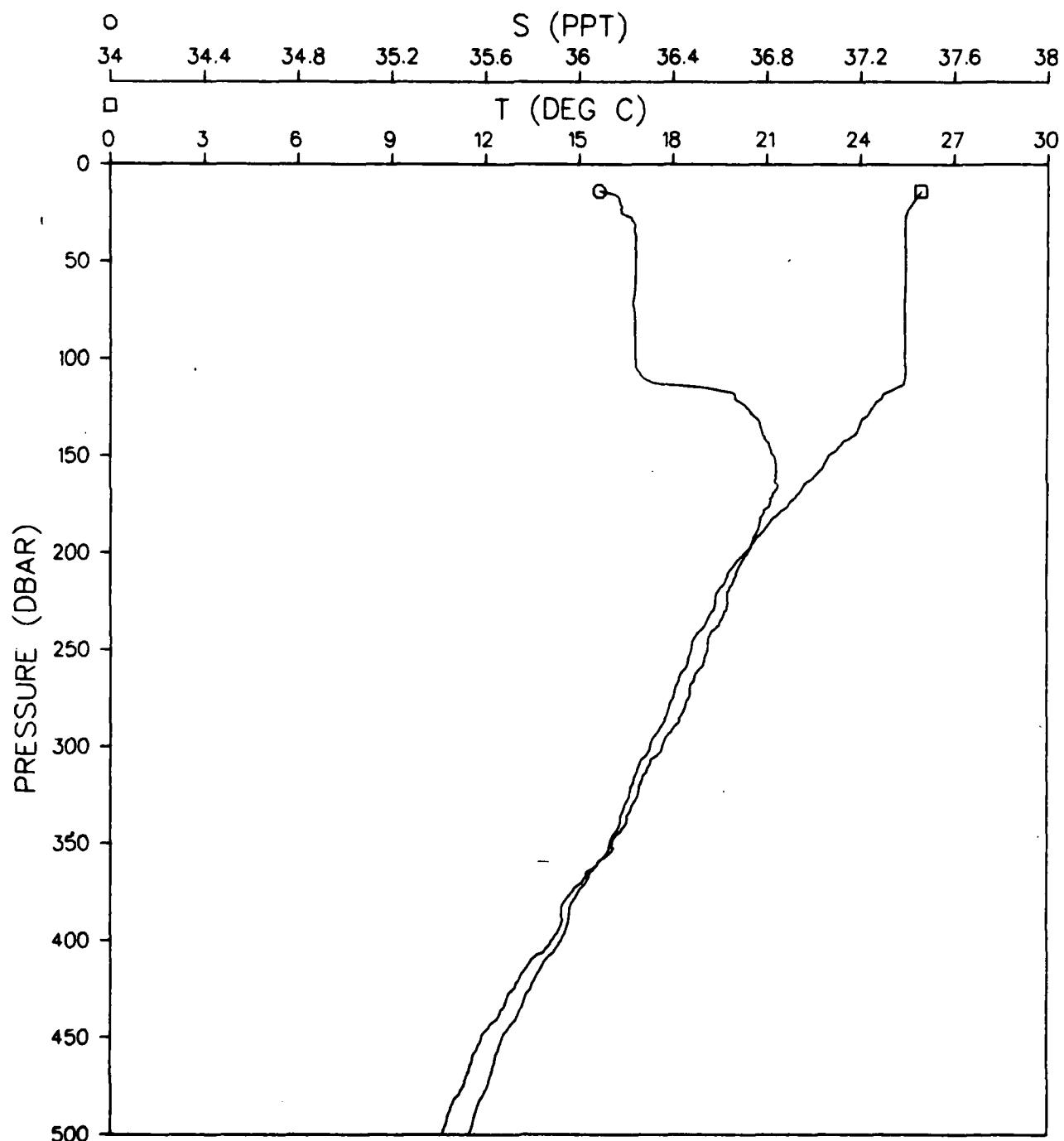


Figure 295.

ATOM 79 DEPLOYMENT
STATION 100023

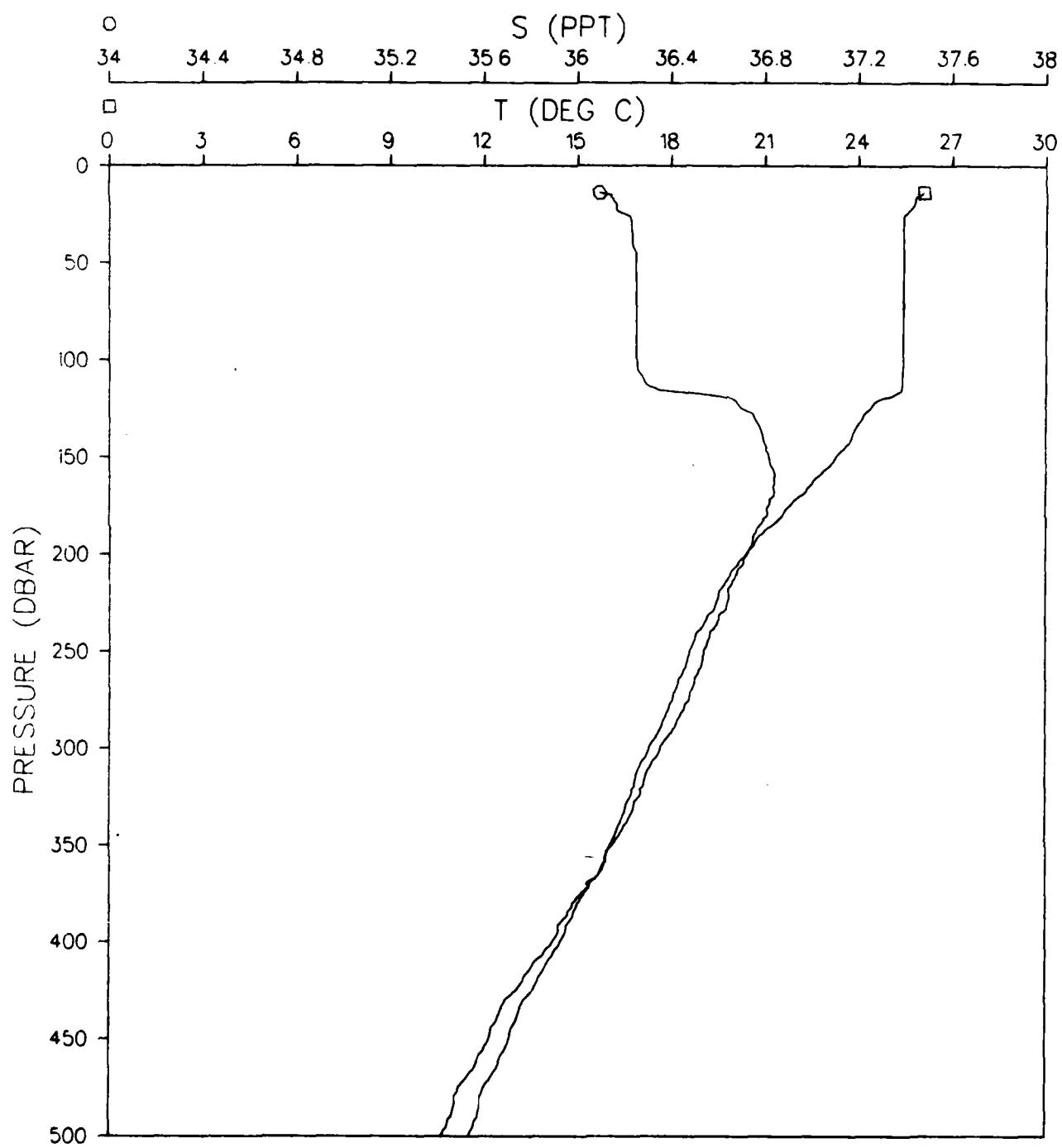


Figure 296.

ATOM 79 DEPLOYMENT
STATION 100024

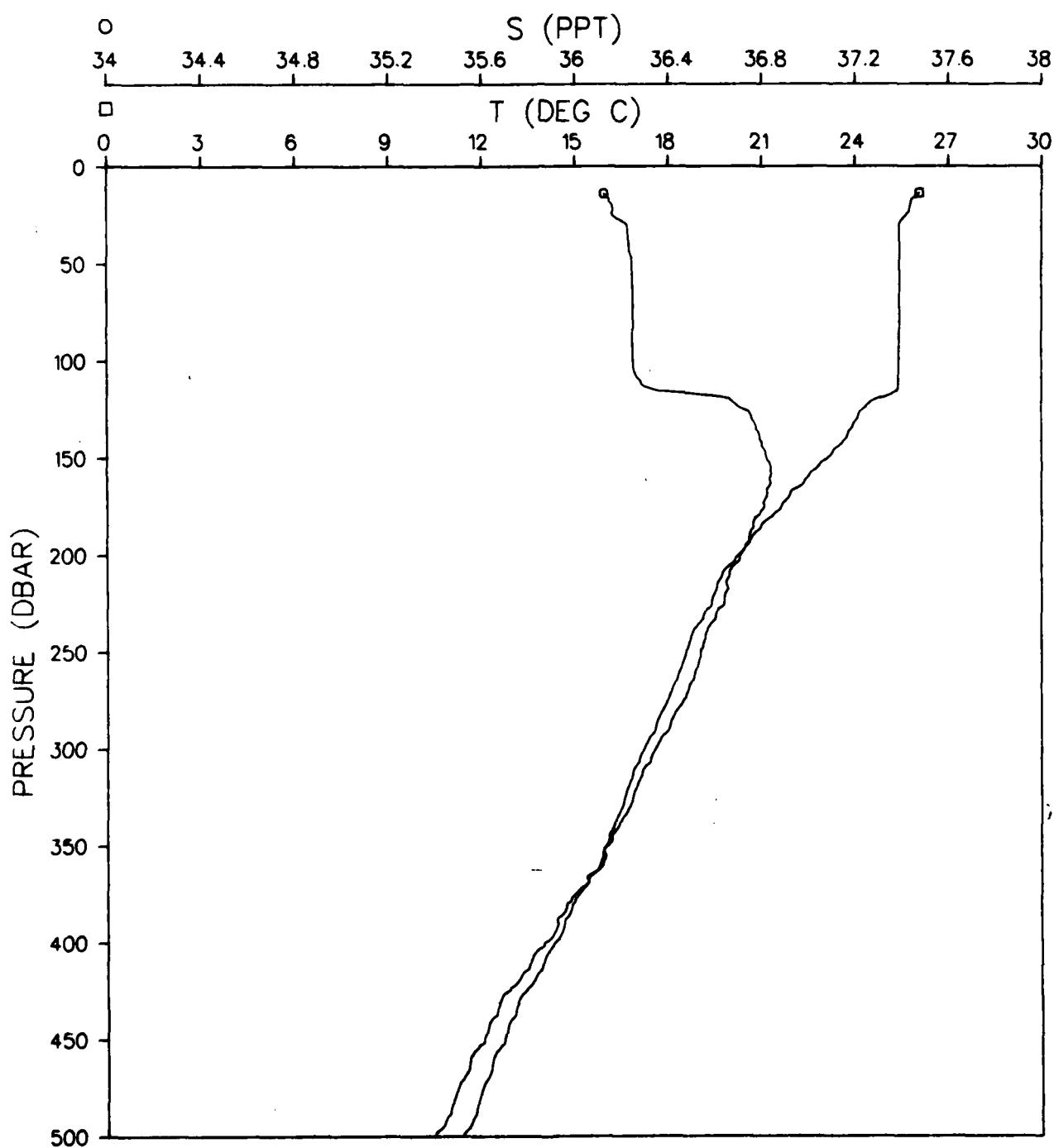


Figure 297.

ATOM 79 DEPLOYMENT
STATION 100025

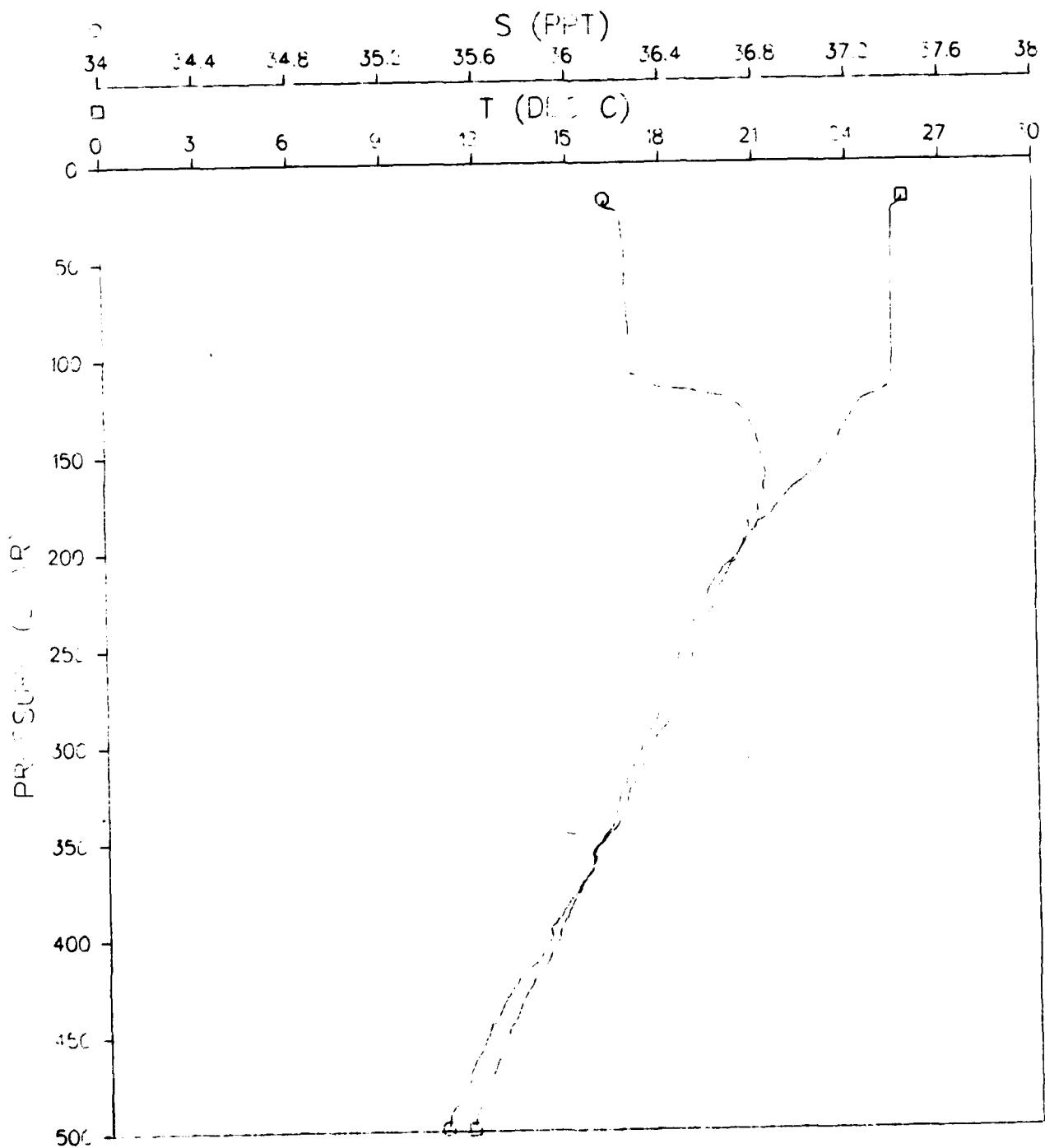


Figure 298.

ATOM 79 DEPLOYMENT
STATION 100026

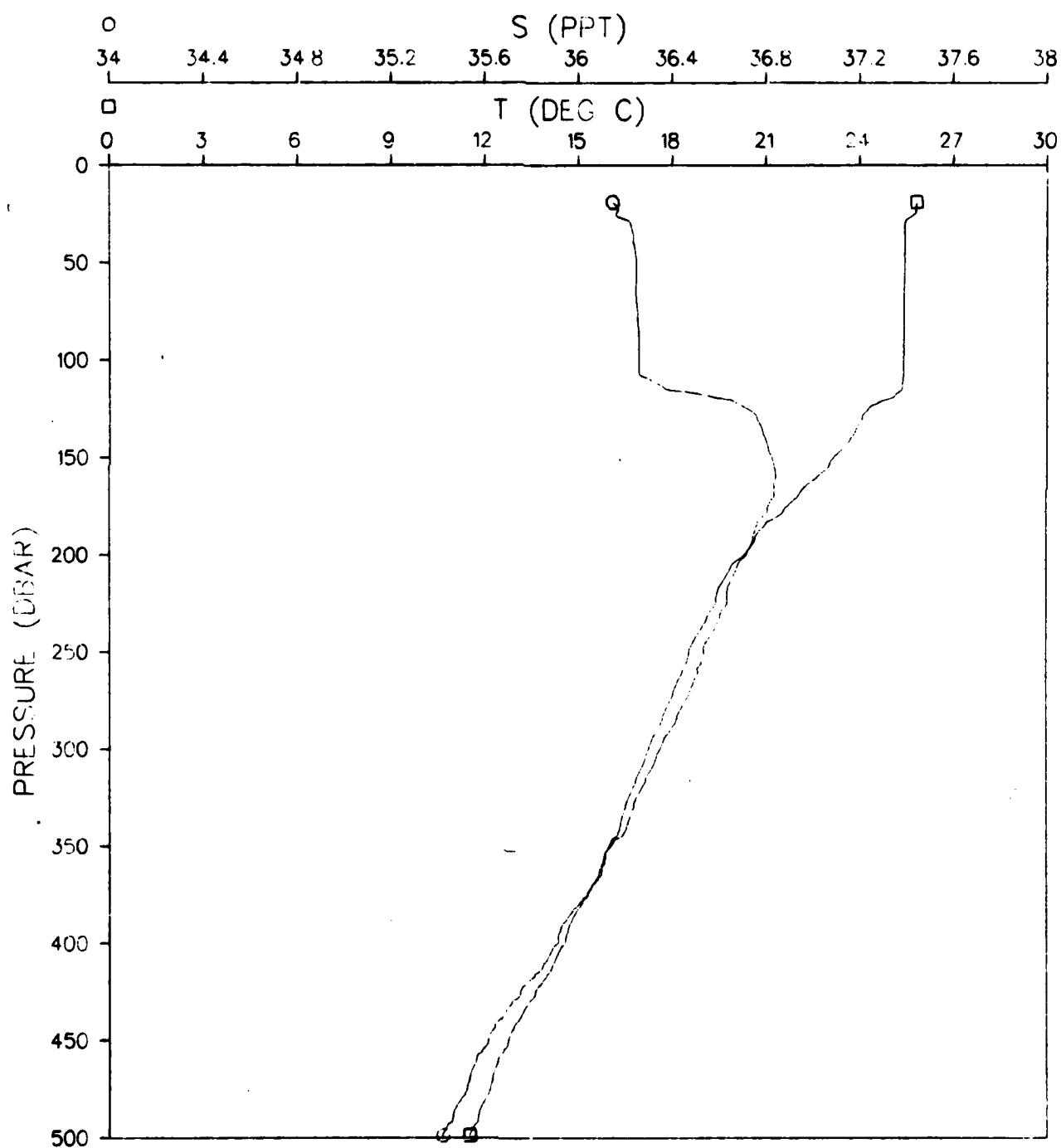


Figure 299.

ATOM 79 DEPLOYMENT
STATION 100027

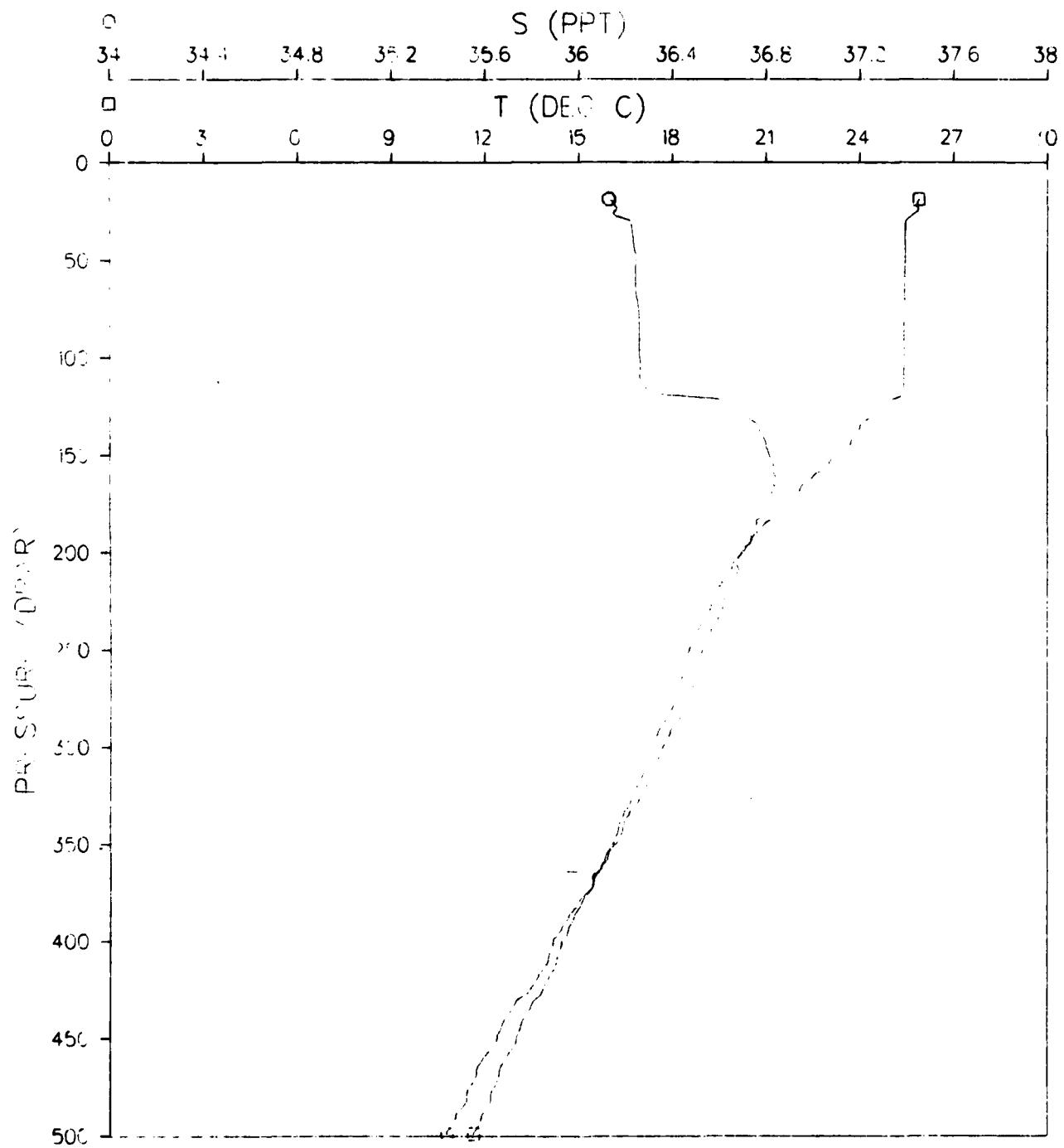


Figure 300.

ATOM 79 DEPLOYMENT
STATION 100028

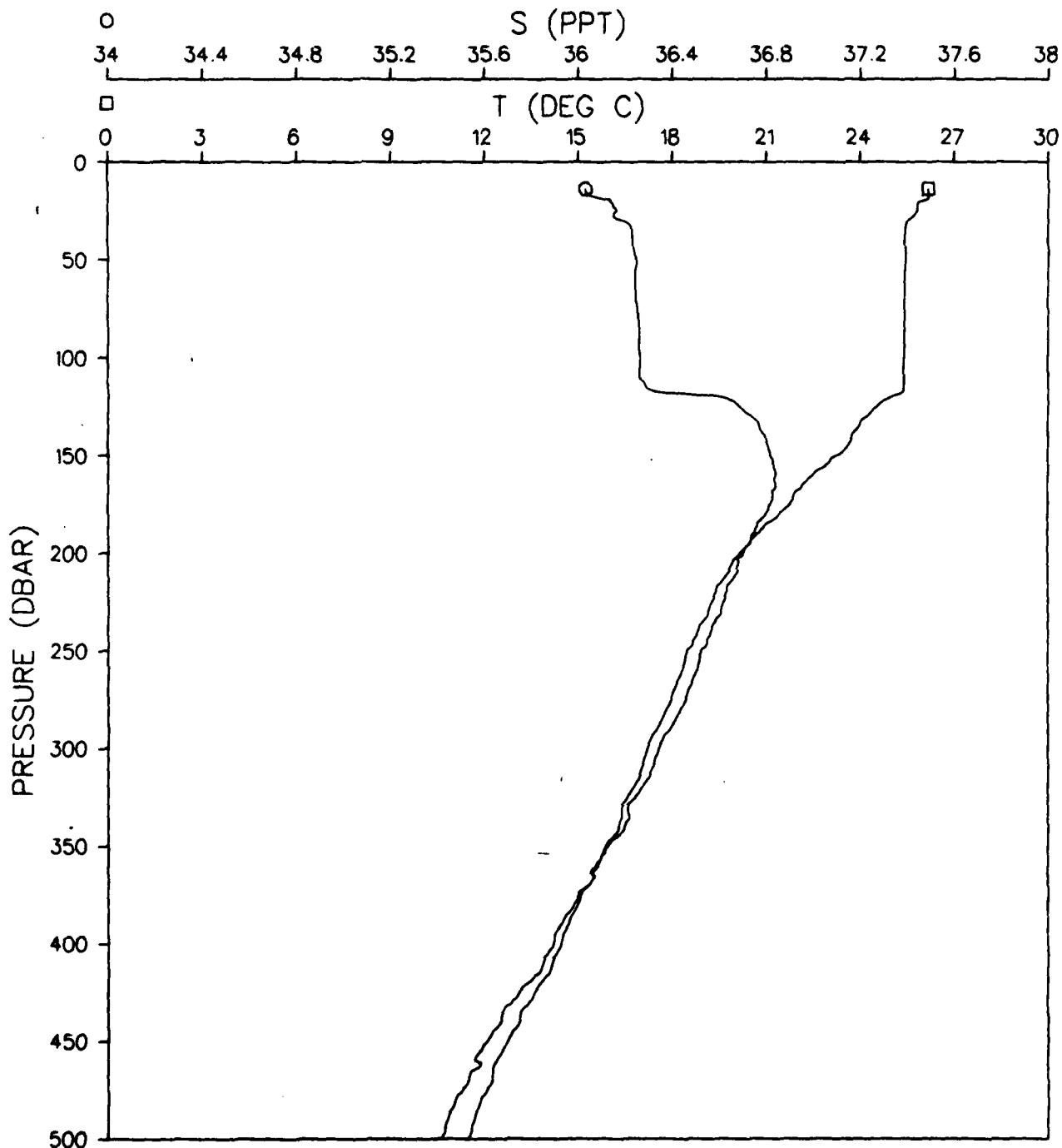


Figure 301.

ATOM 79 DEPLOYMENT
STATION 10002

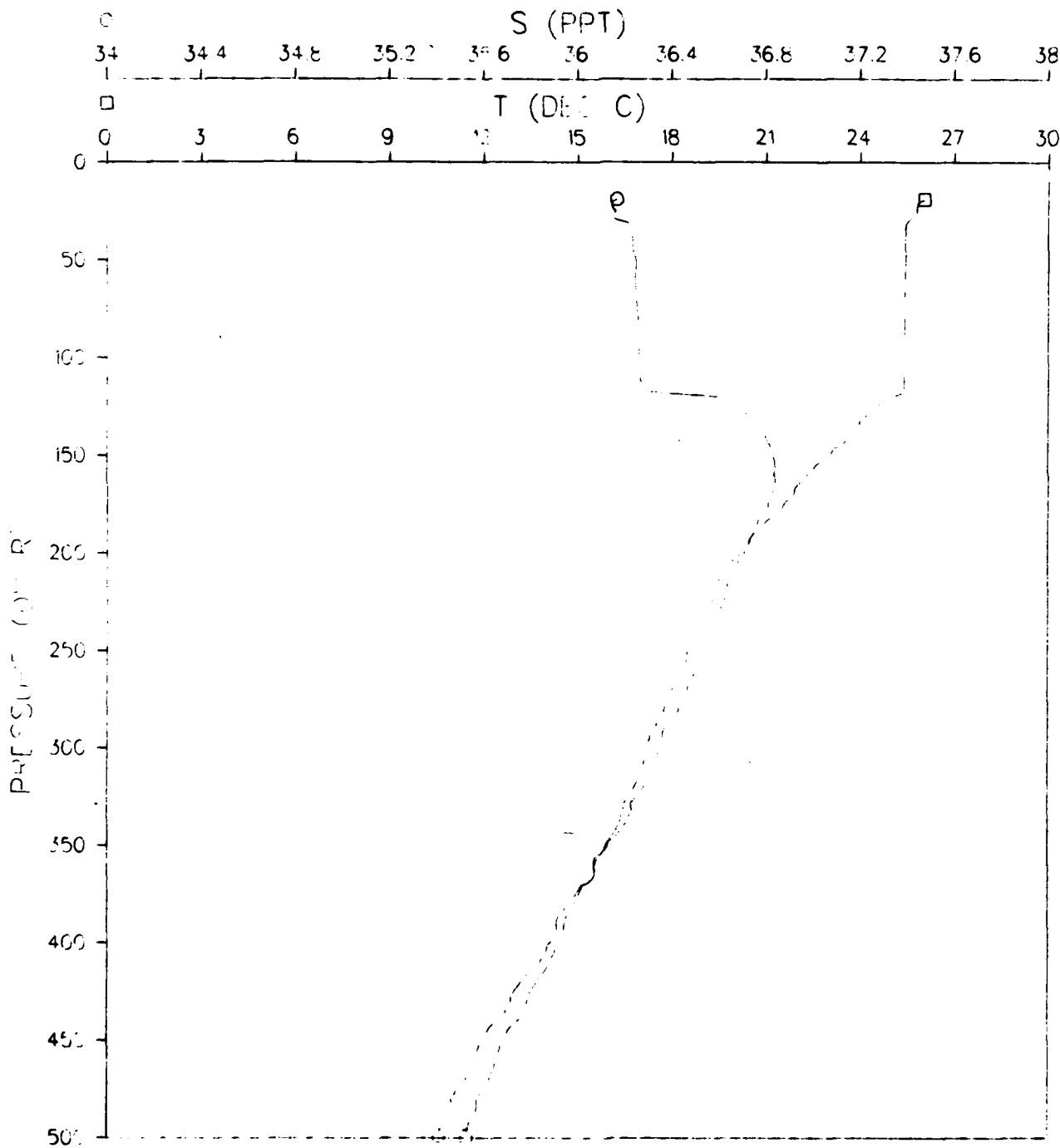


Figure 302.

ATOM 79 DEPLOYMENT
STATION 100030

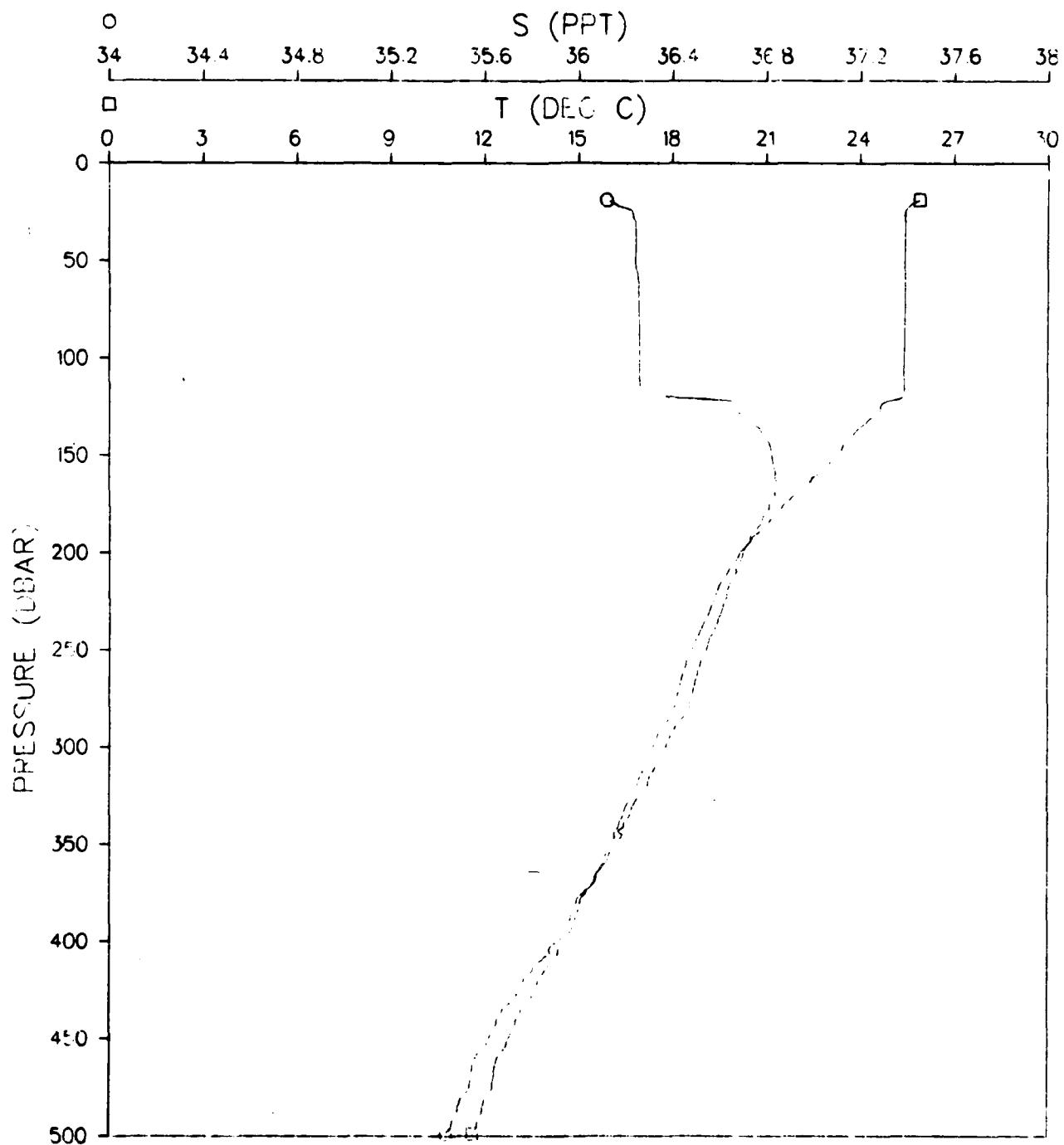


Figure 303.

ATOM 79 DEPLOYMENT
STATION 100031

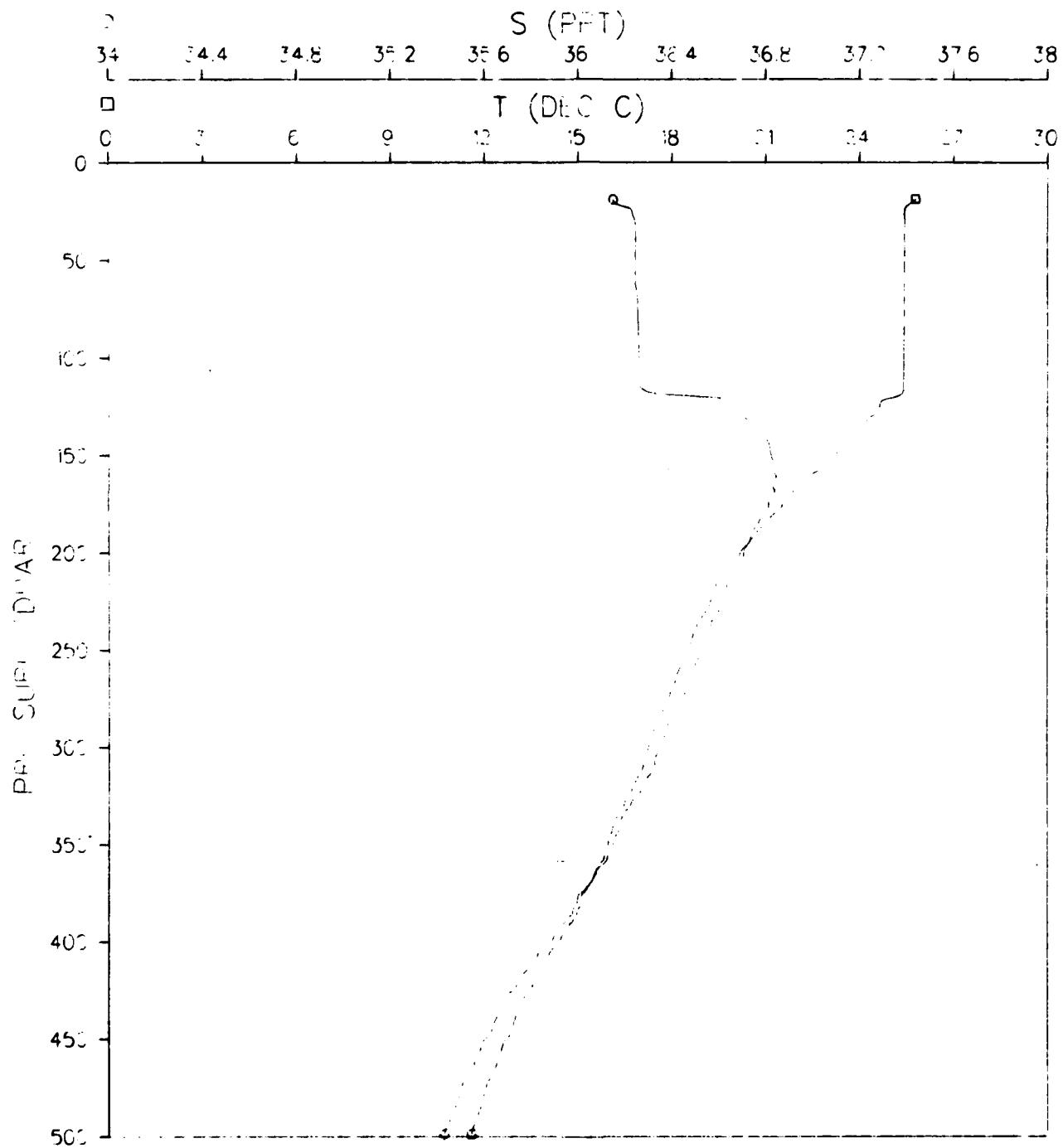


Figure 304.

ATOM 79 DEPLOYMENT
STATION 100032

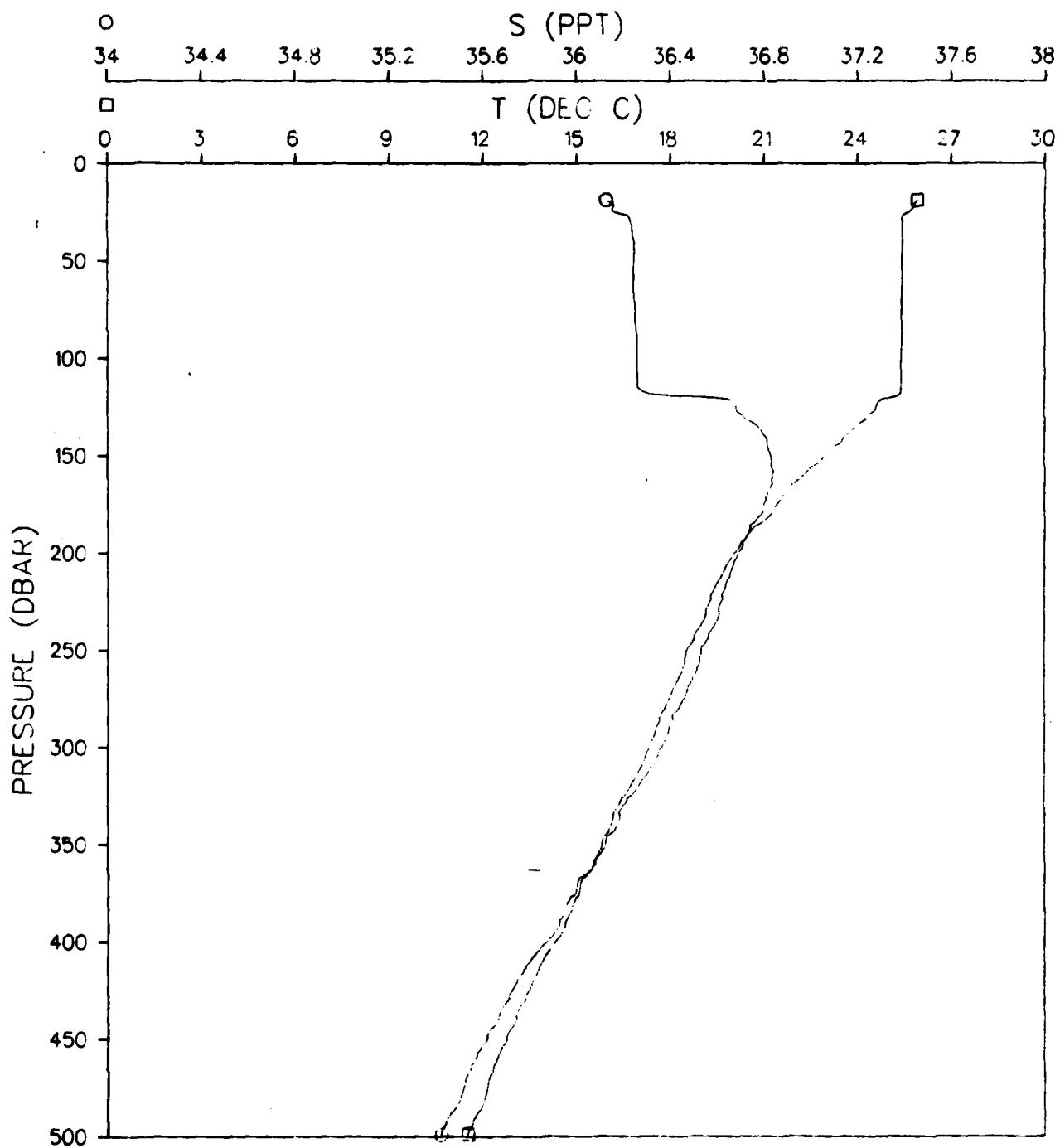


Figure 305.

ATOM 79 DEPLOYMENT
STATION 1005 '3

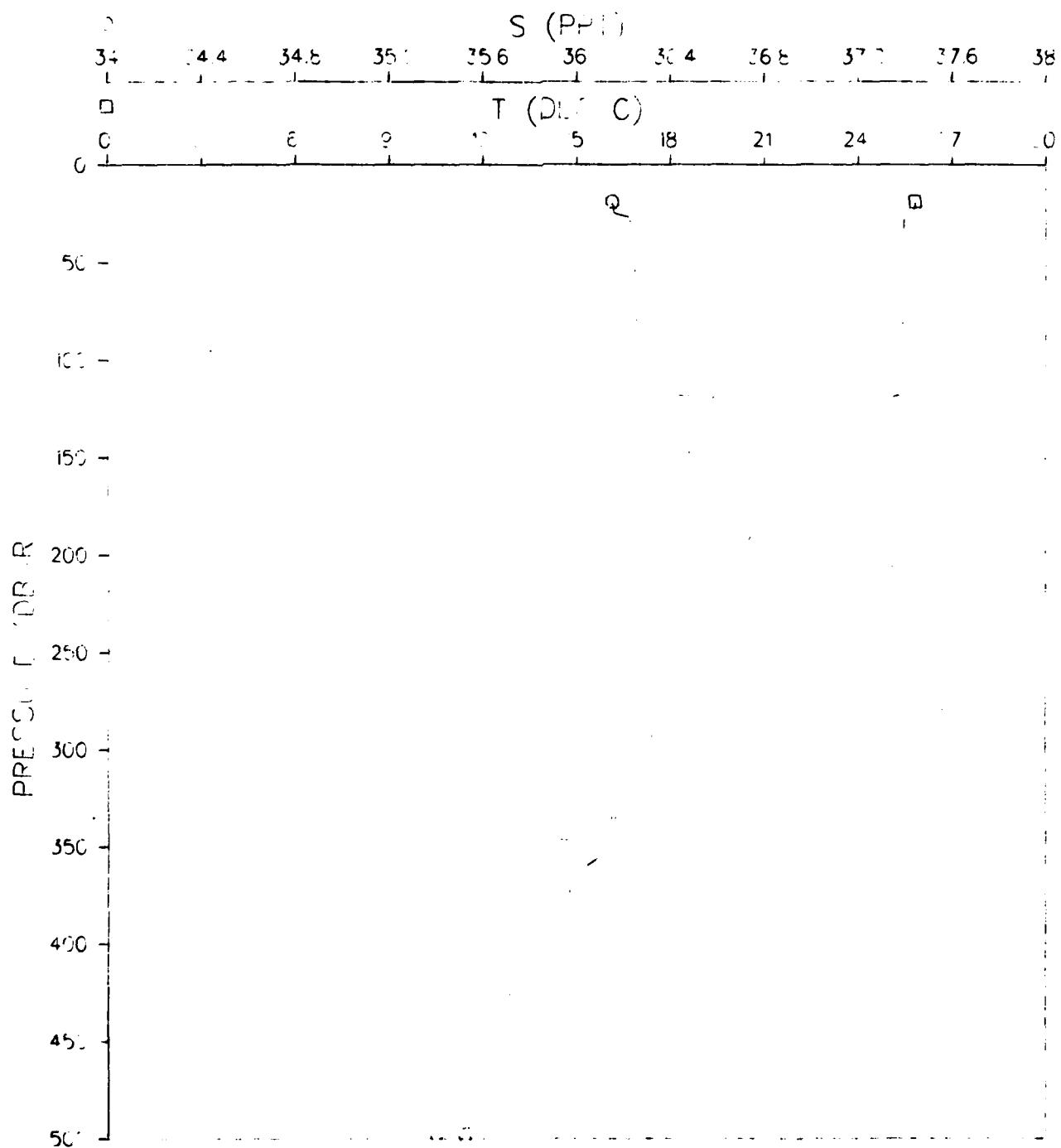


Figure 306.

ATOM 79 DEPLOYMENT
STATION 100034

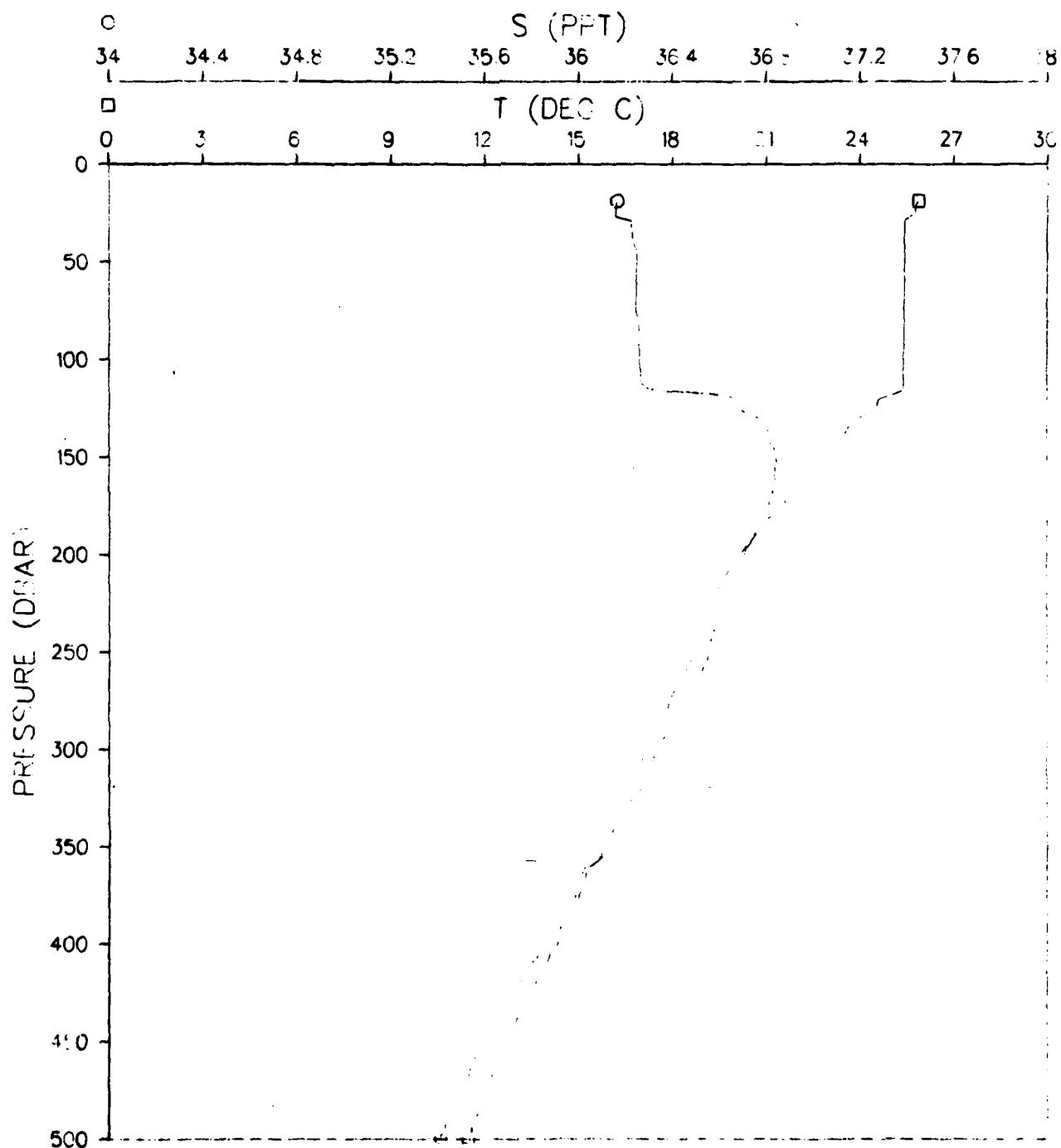


Figure 307.

ATOM 79 DEPLOYMENT
STATION 100001

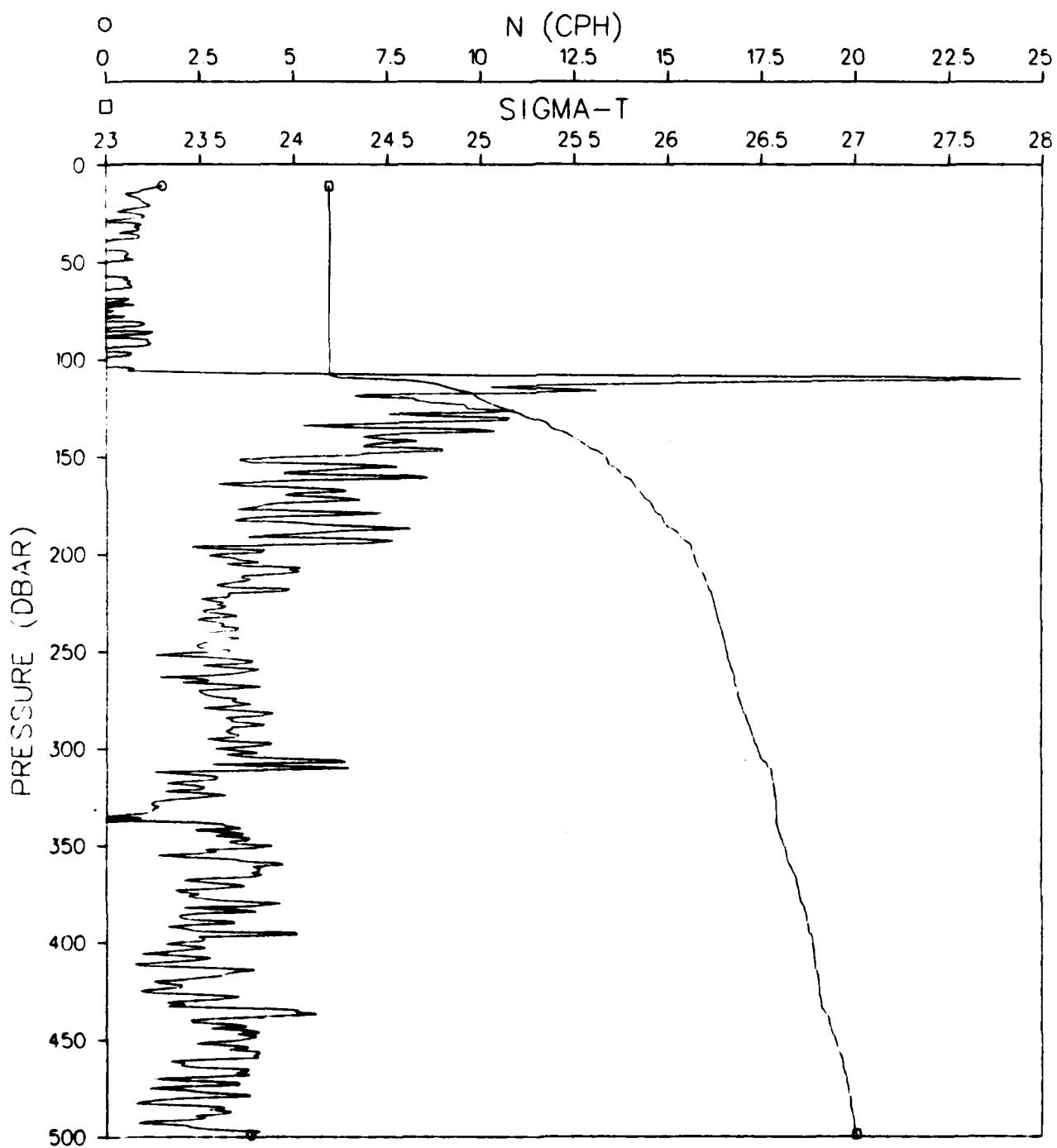


Figure 308.

ATOM 79 DEPLOYMENT
STATION 100005

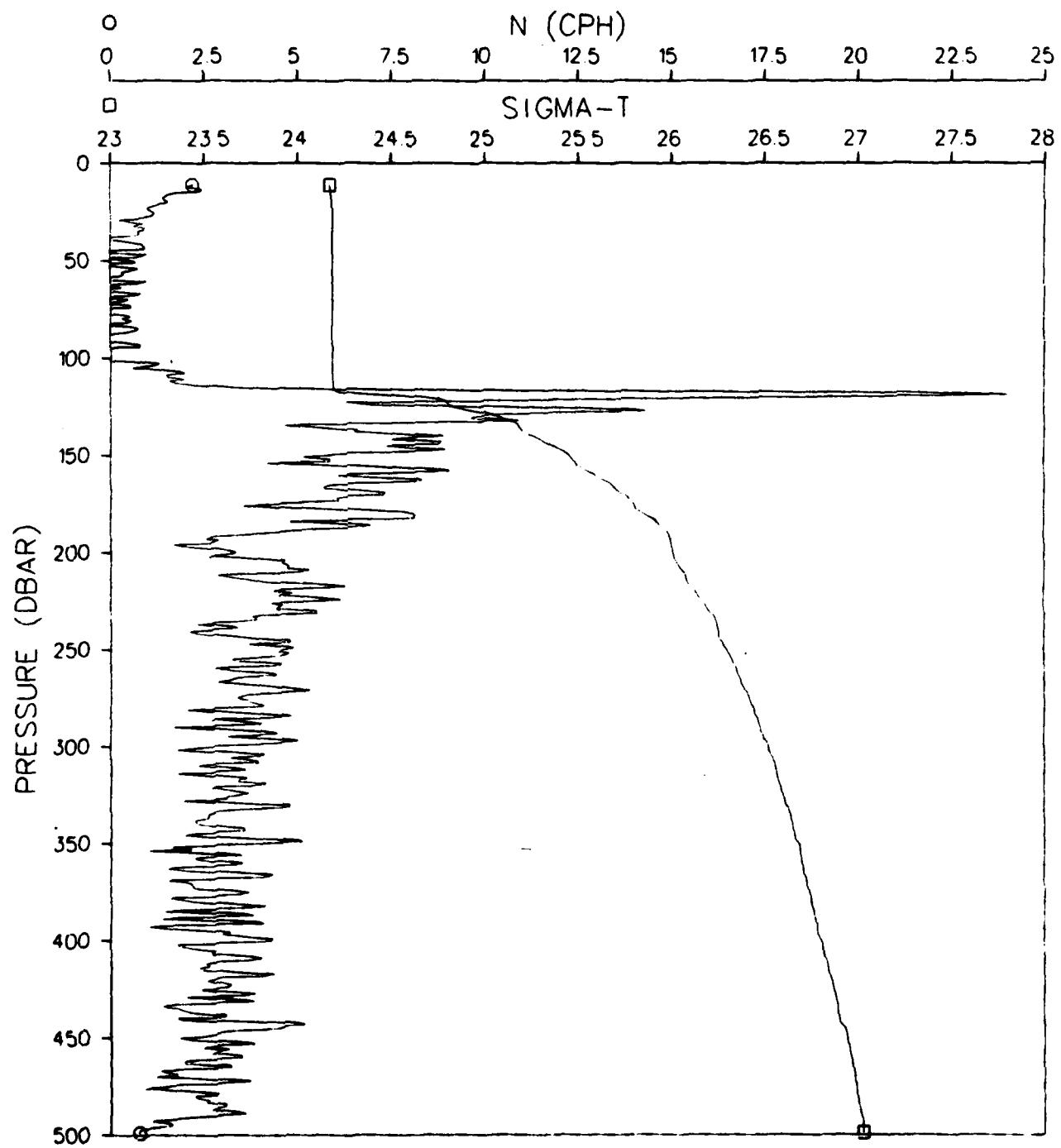


Figure 309.

ATOM 79 DEPLOYMENT
STATION 100006

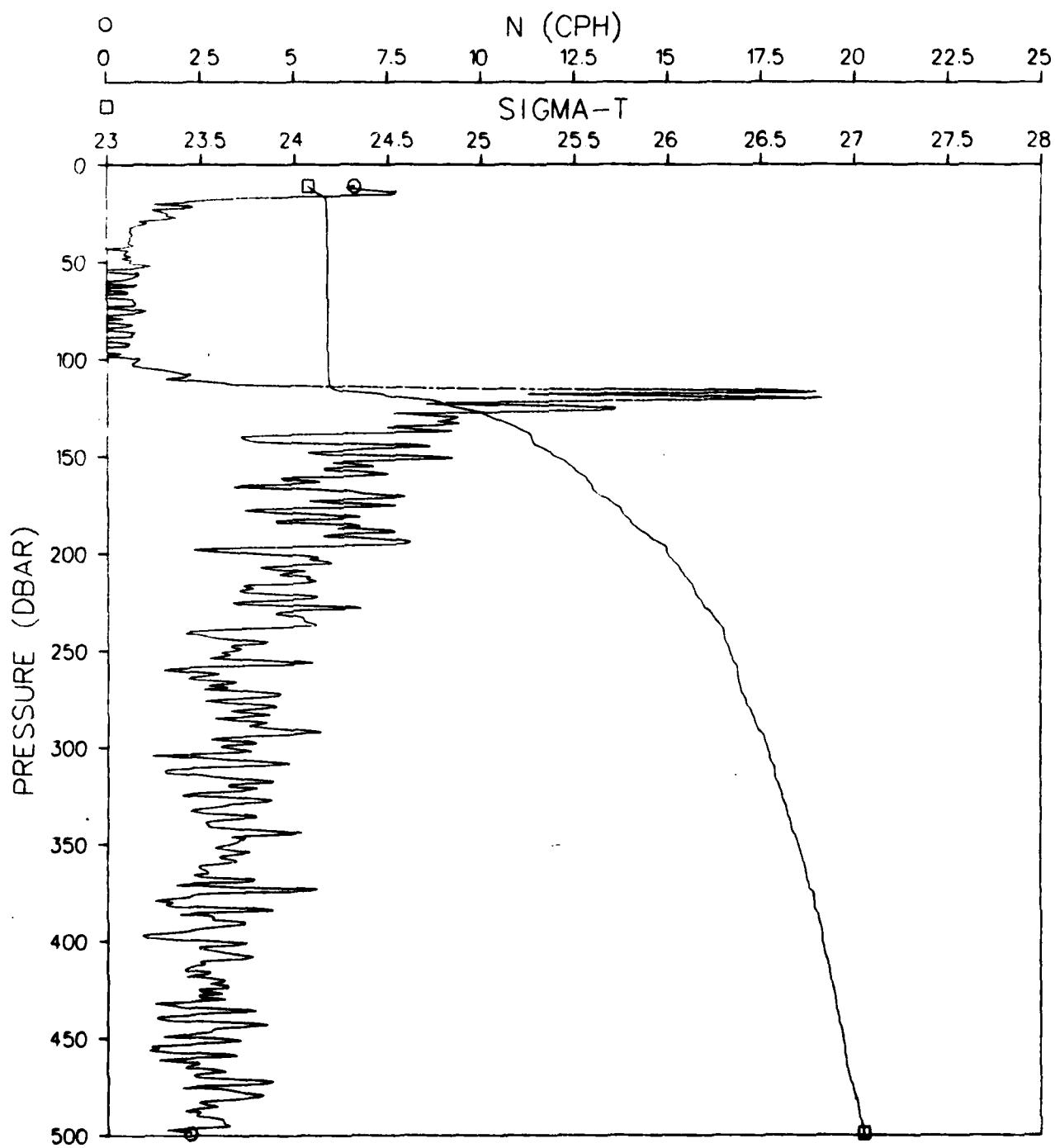


Figure 310.

ATOM 79 DEPLOYMENT
STATION 100007

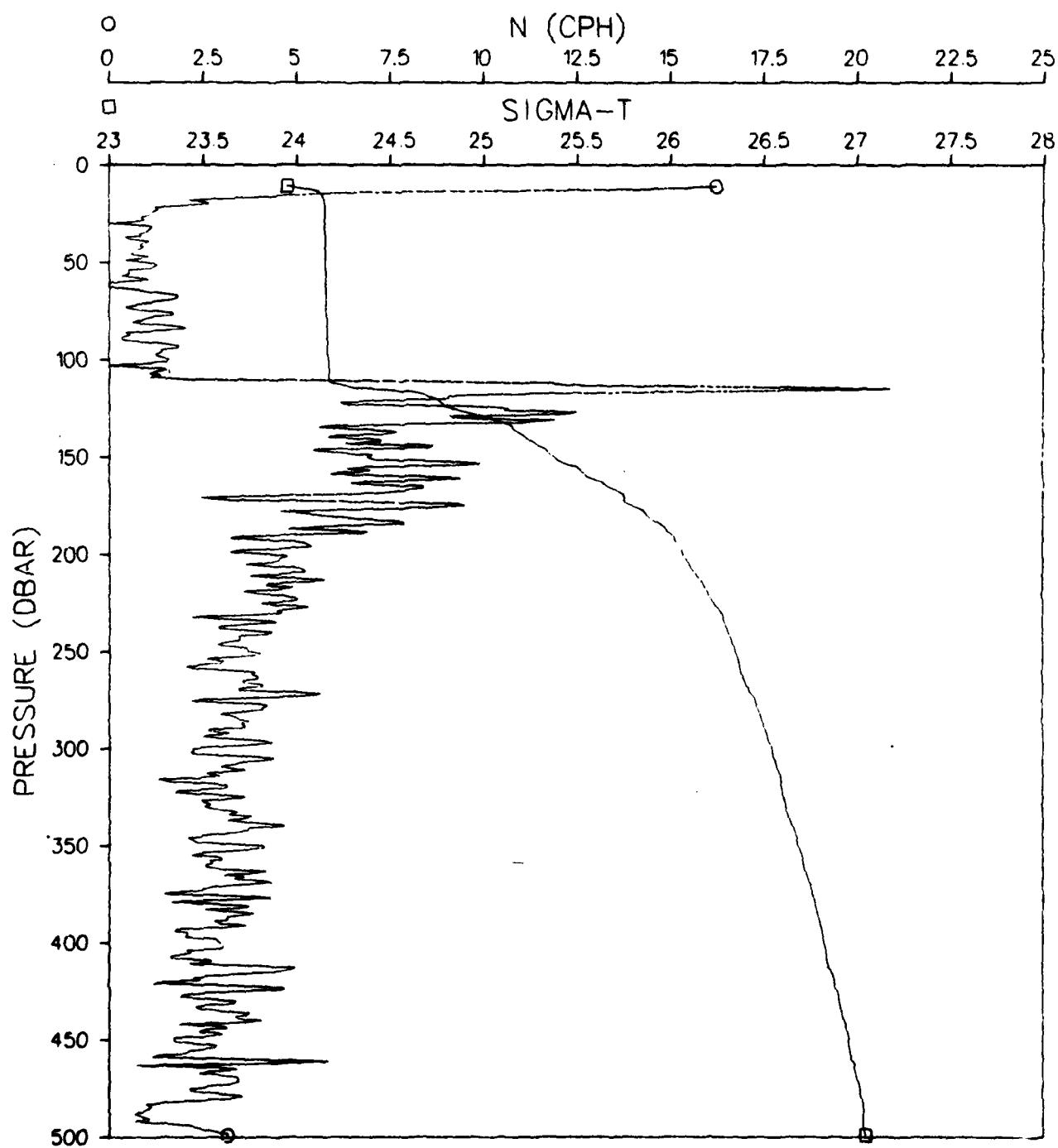


Figure 311.

ATOM 79 DEPLOYMENT
STATION 100008

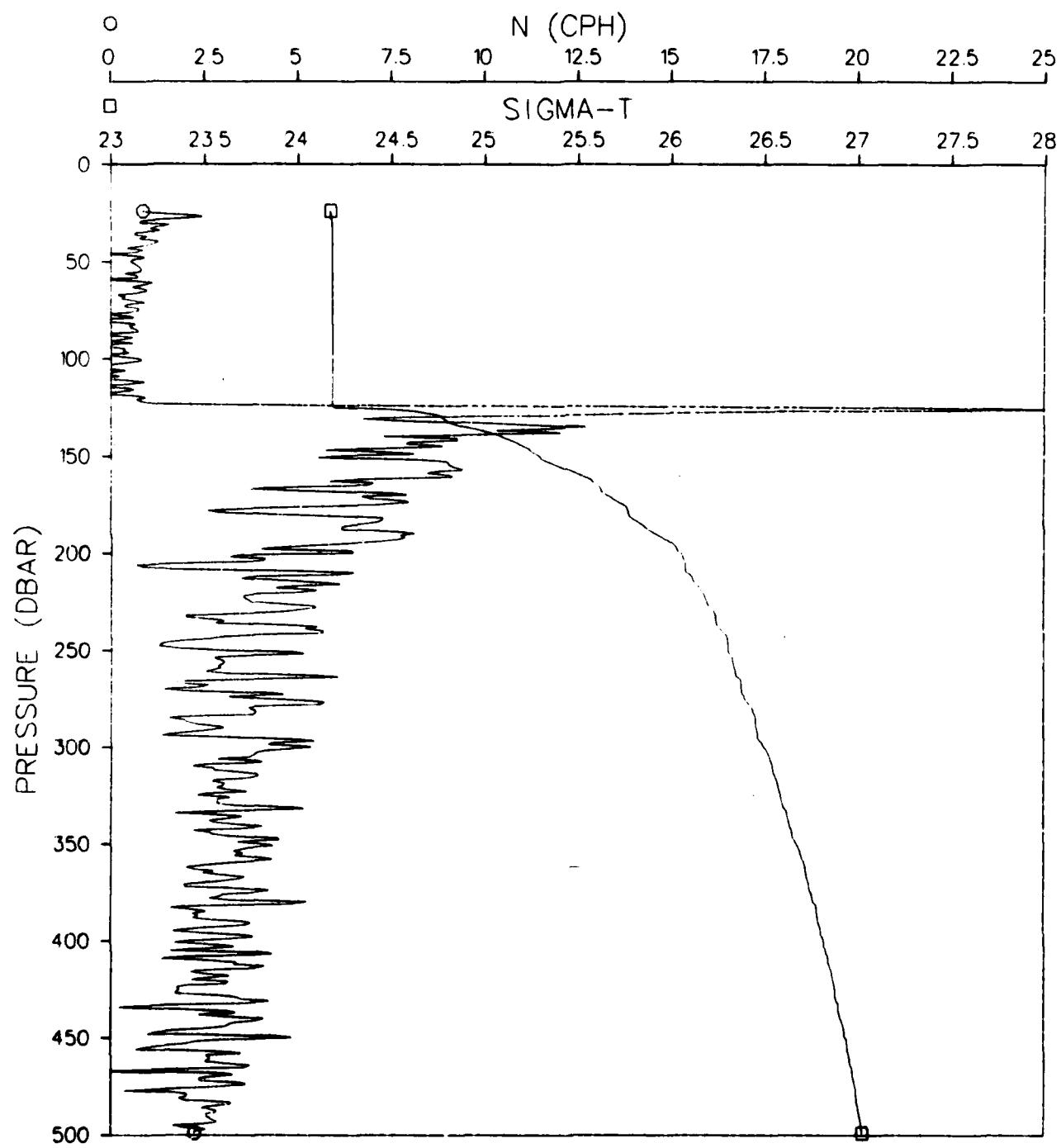


Figure 312.

ATOM 79 DEPLOYMENT
STATION 100009

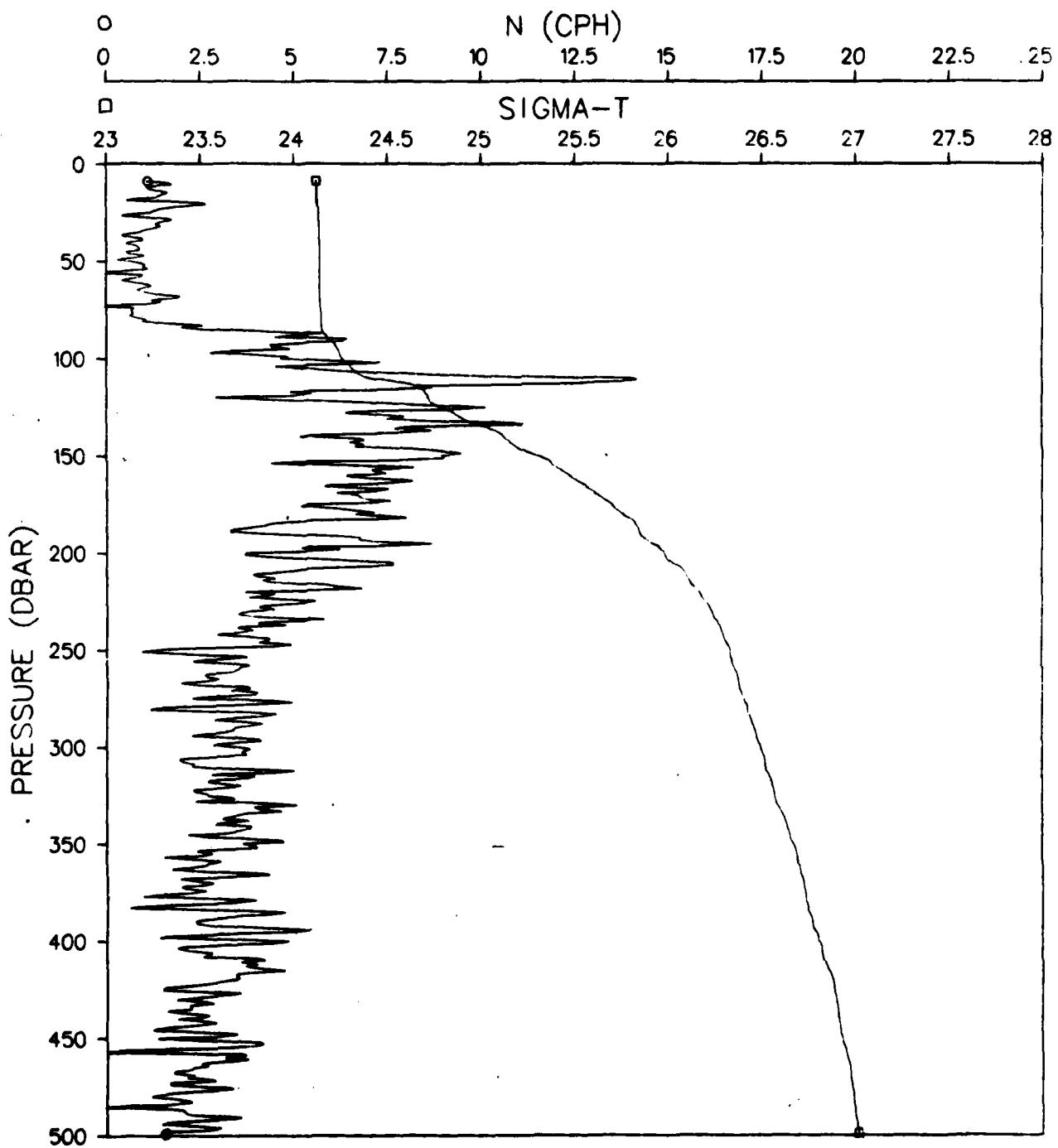


Figure 313.

ATOM 79 DEPLOYMENT
STATION 100010

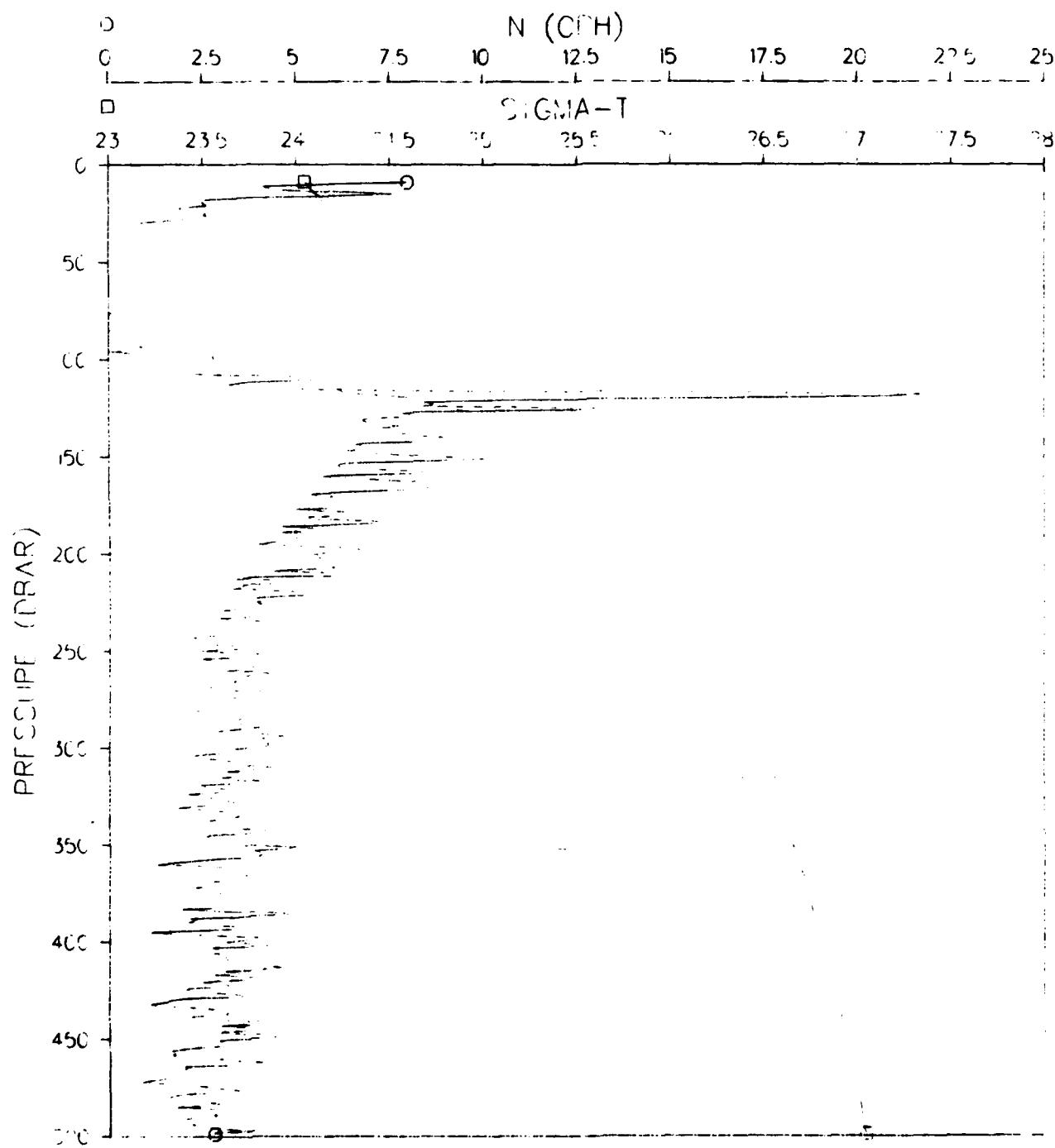


Figure 314.

ATOM 79 DEPLOYMENT
STATION 100011

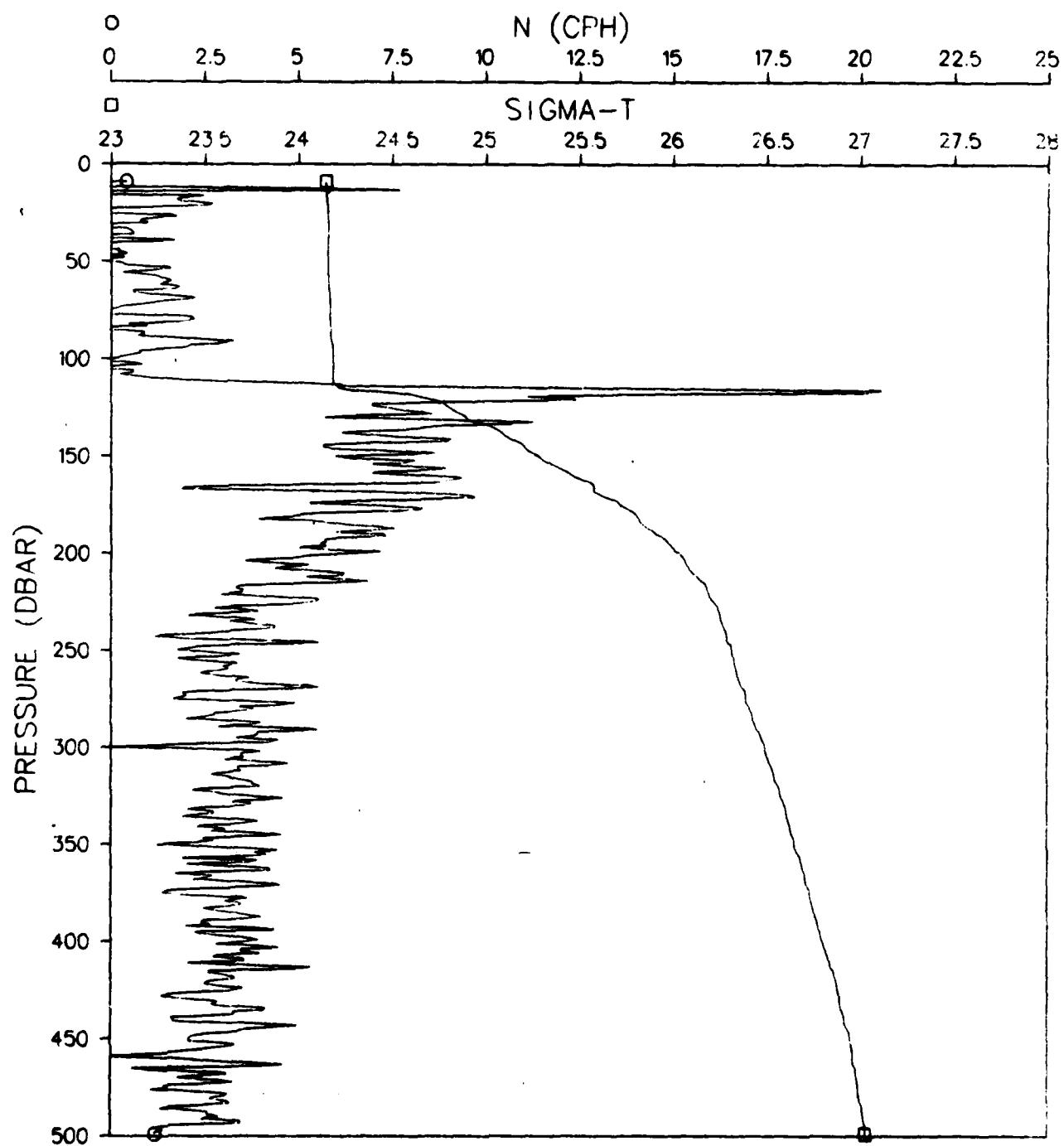


Figure 315.

ATOM 79 DEPLOYMENT
STATION 100012

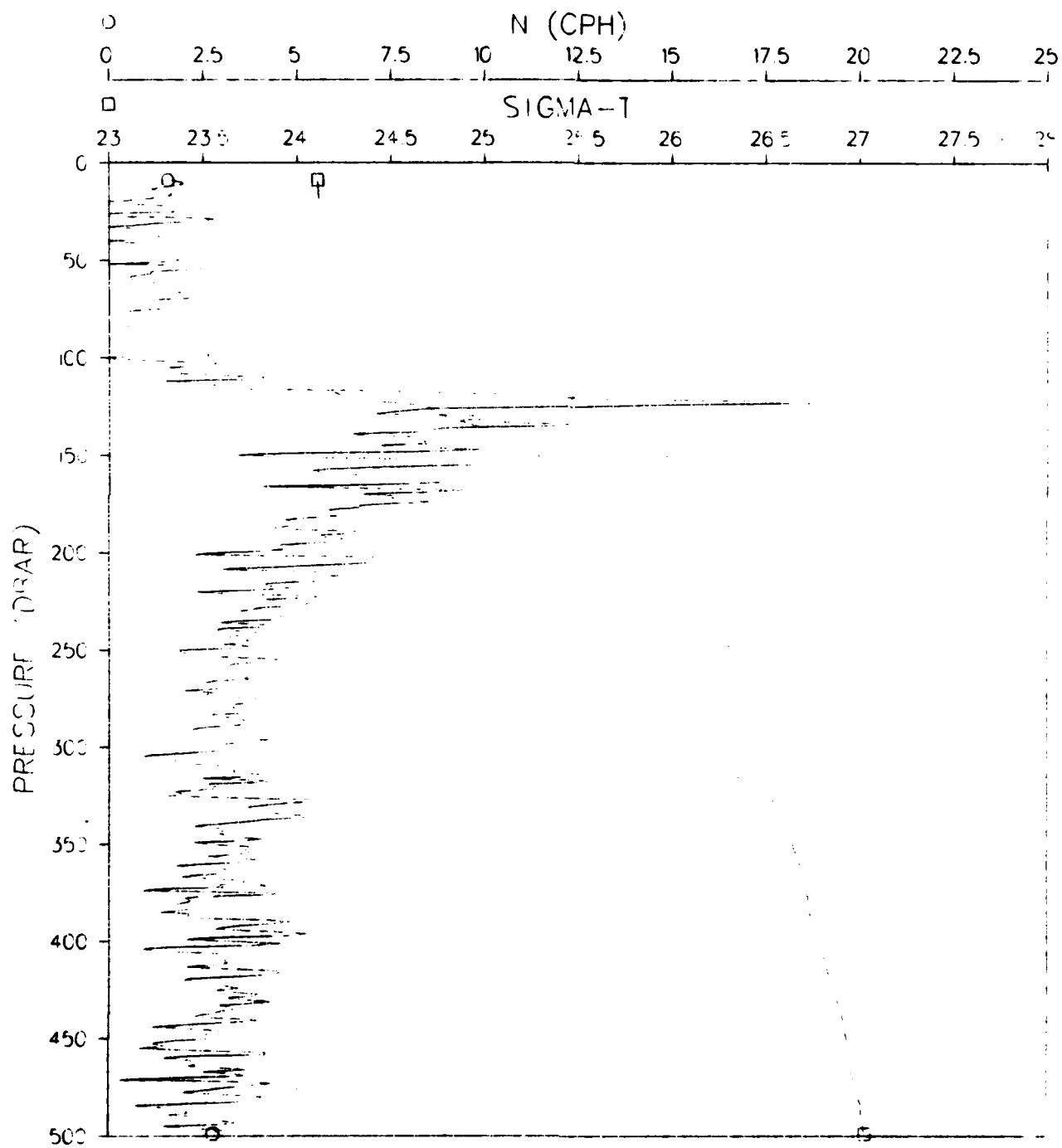


Figure 316.

ATOM 79 DEPLOYMENT
STATION 100013

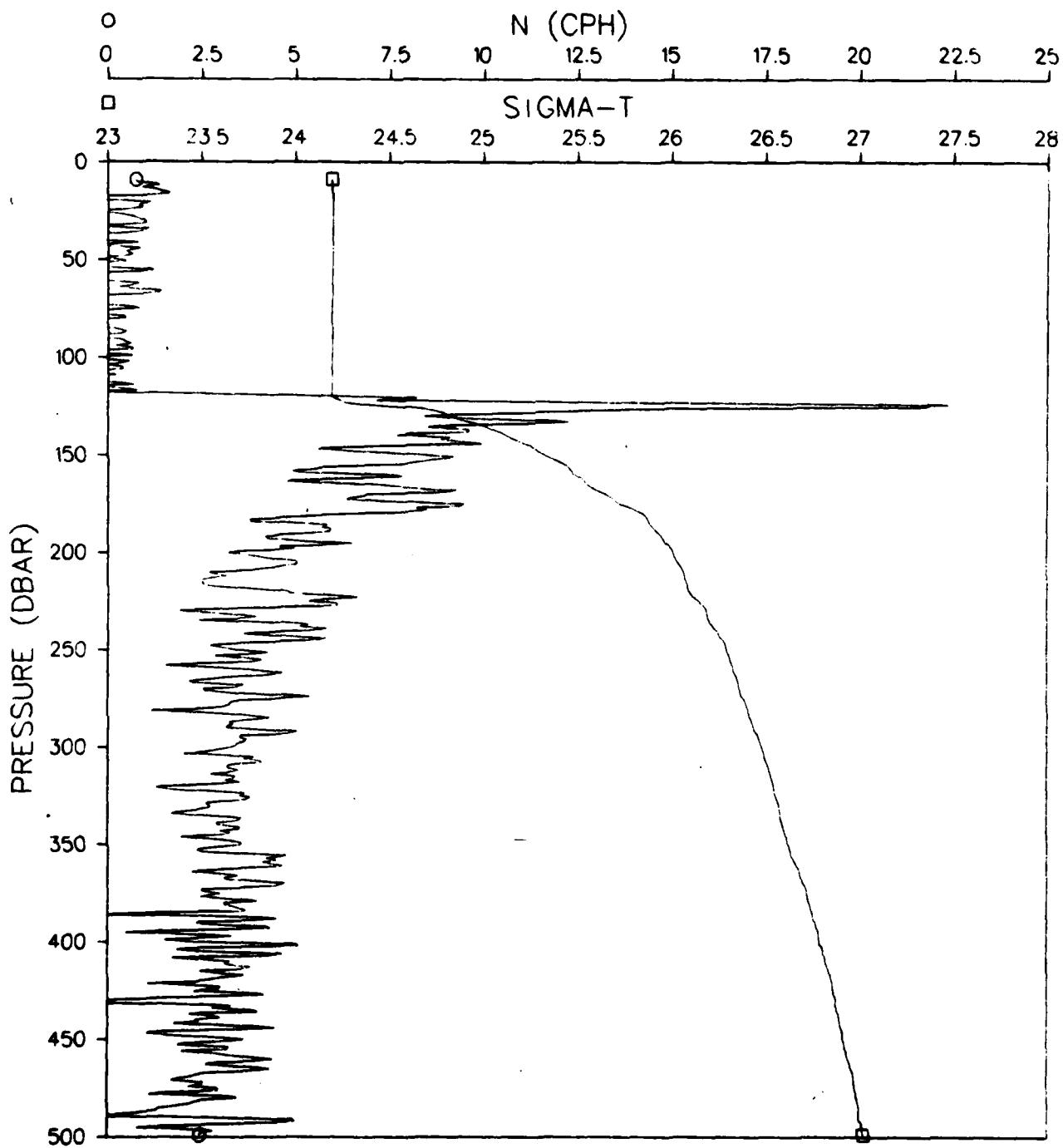


Figure 317.

ATOM 79 DEPLOYMENT
STATION 100014

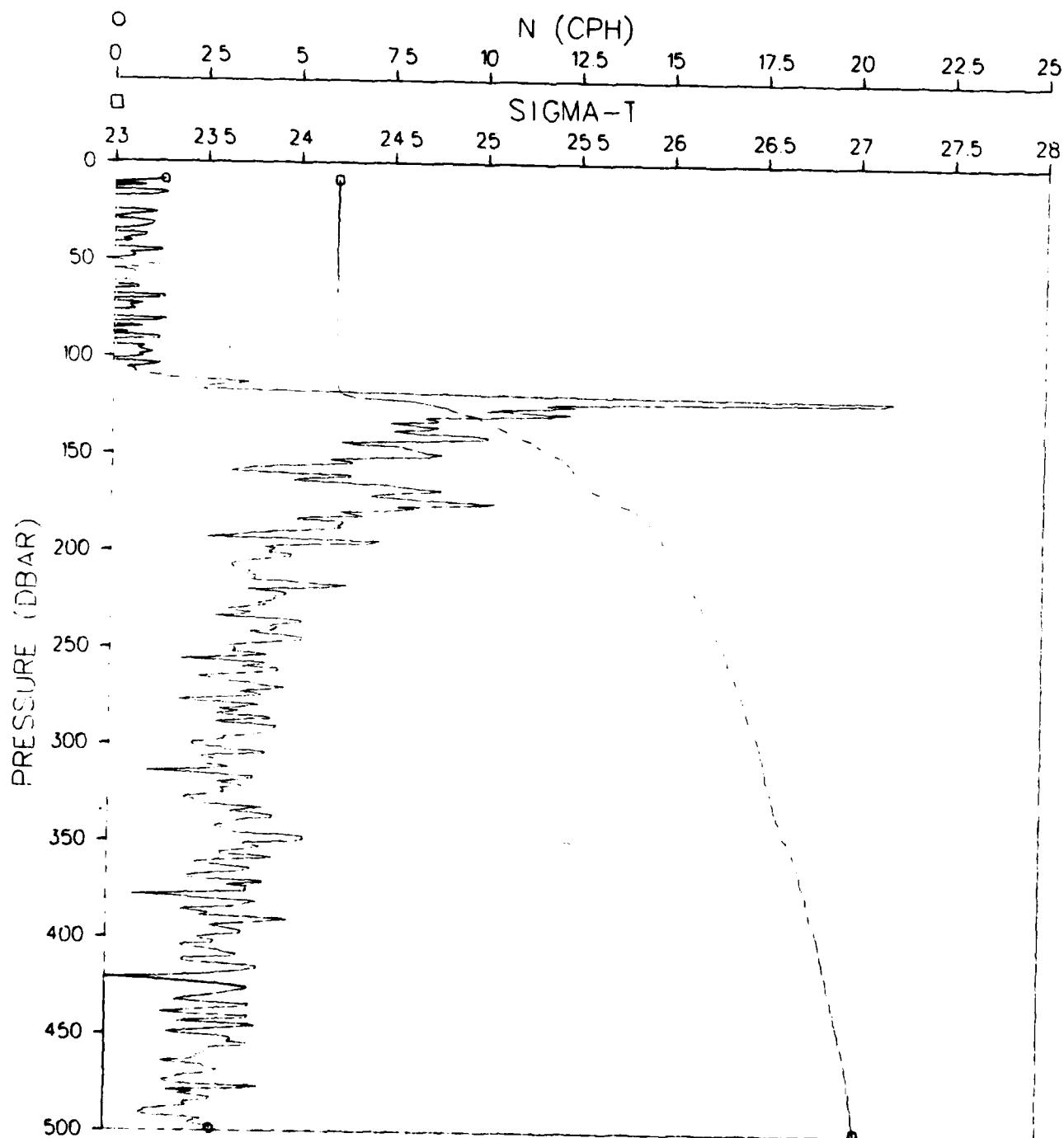


Figure 318.

ATOM 79 DEPLOYMENT
STATION 100015

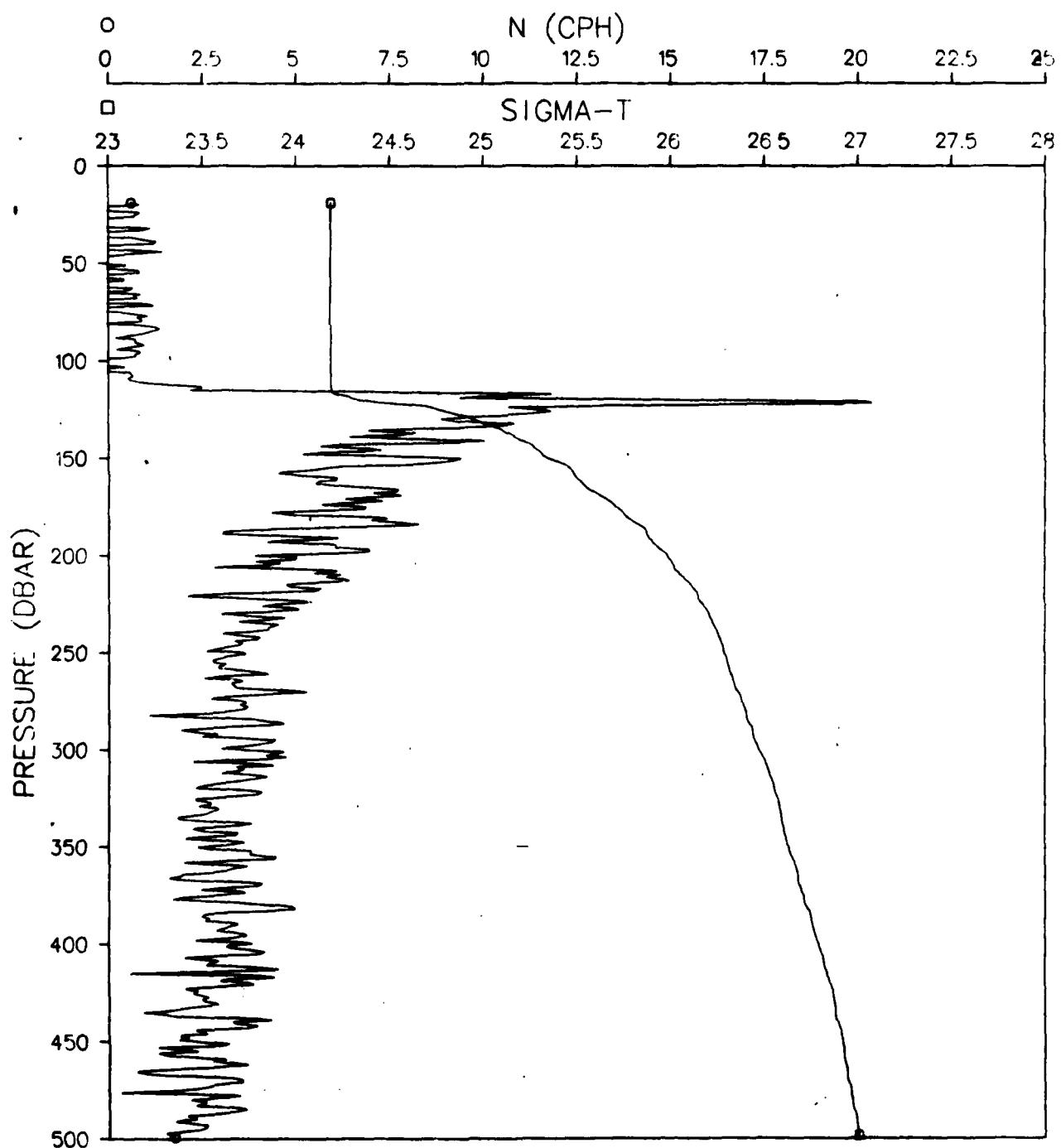


Figure 319.

ATOM 79 DEPLOYMENT
STATION 100016

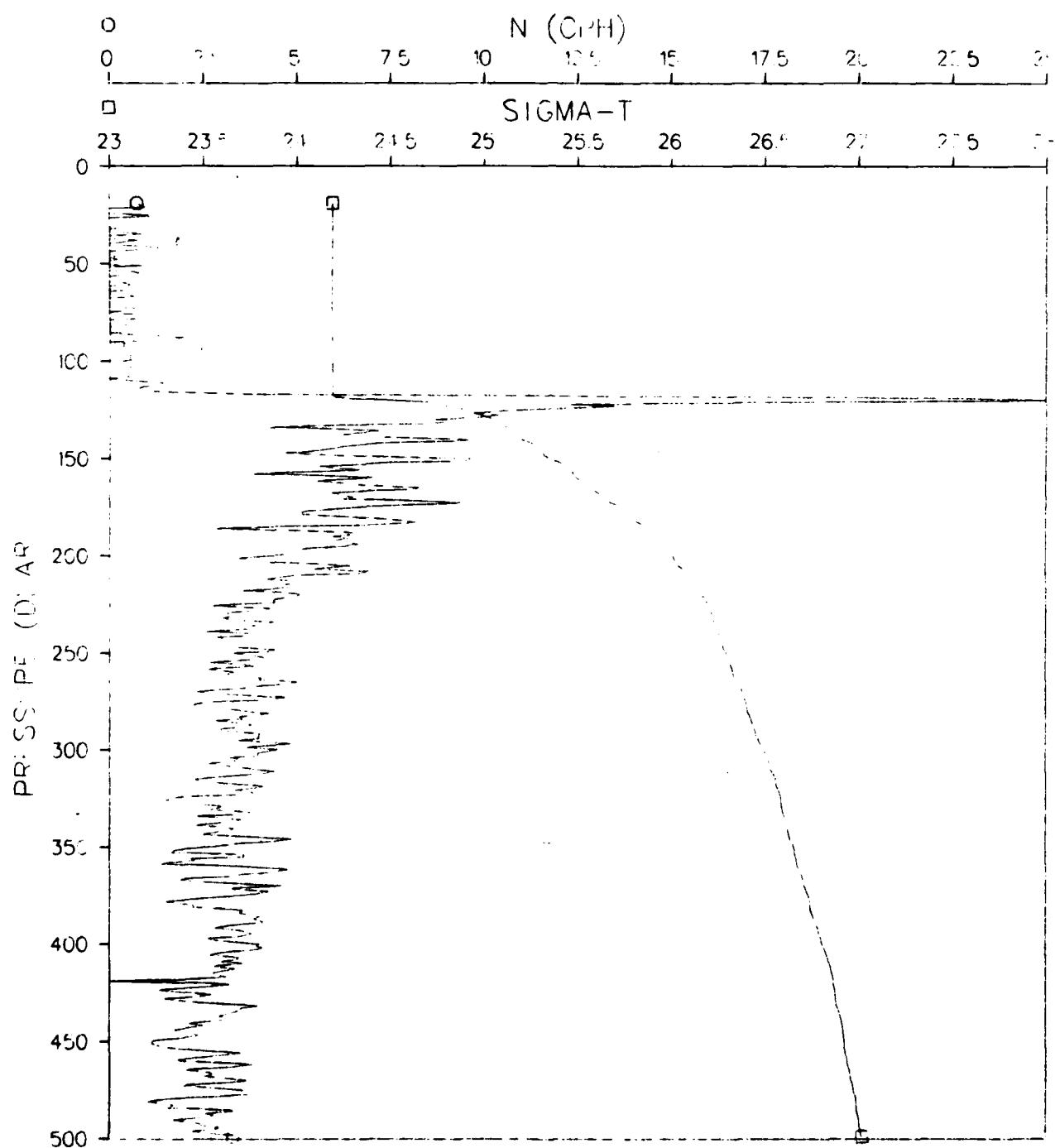


Figure 320.

ATOM 79 DEPLOYMENT
STATION 100017

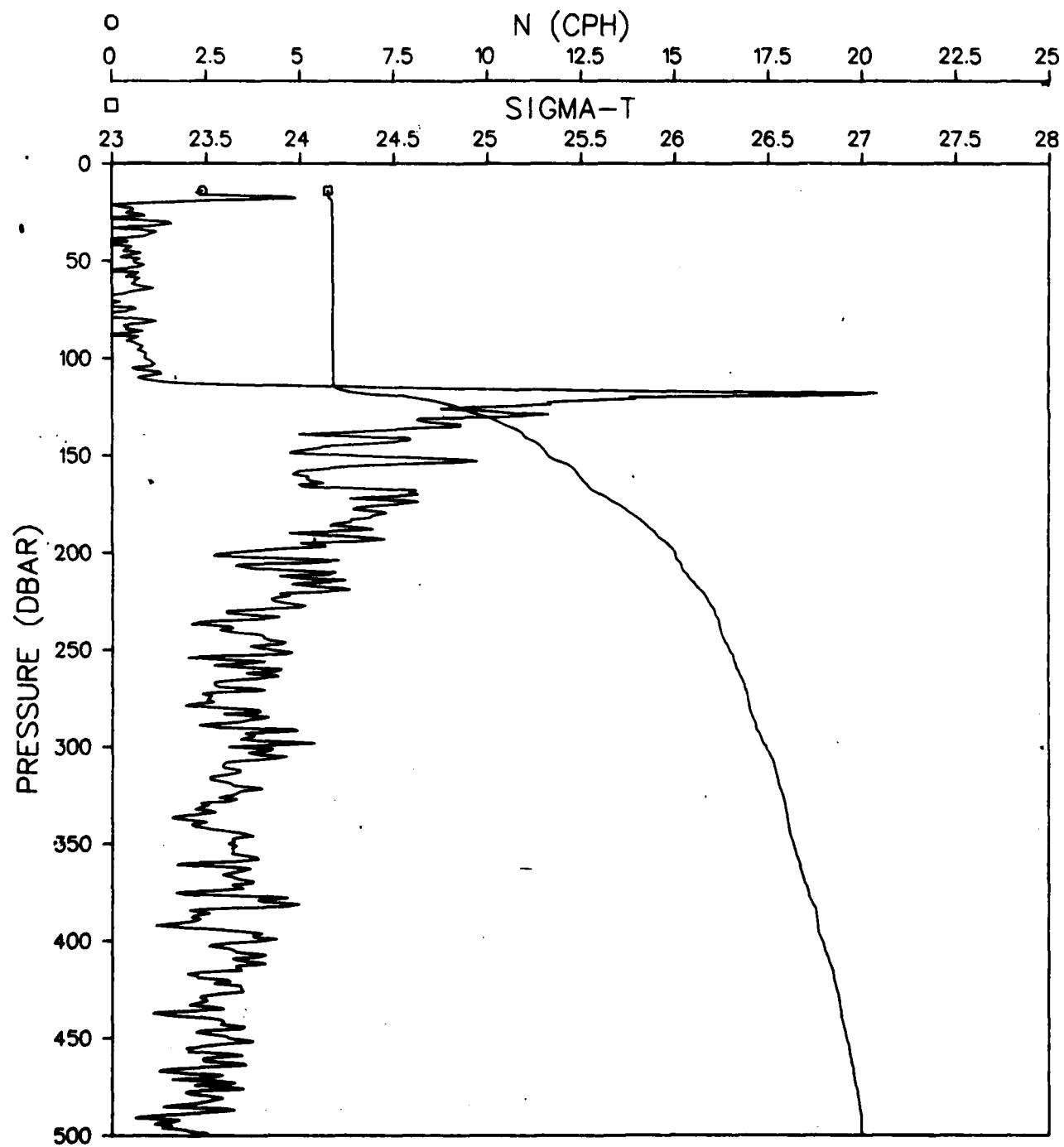


Figure 321.

ATOM 79 DEPLOYMENT
STATION 100018

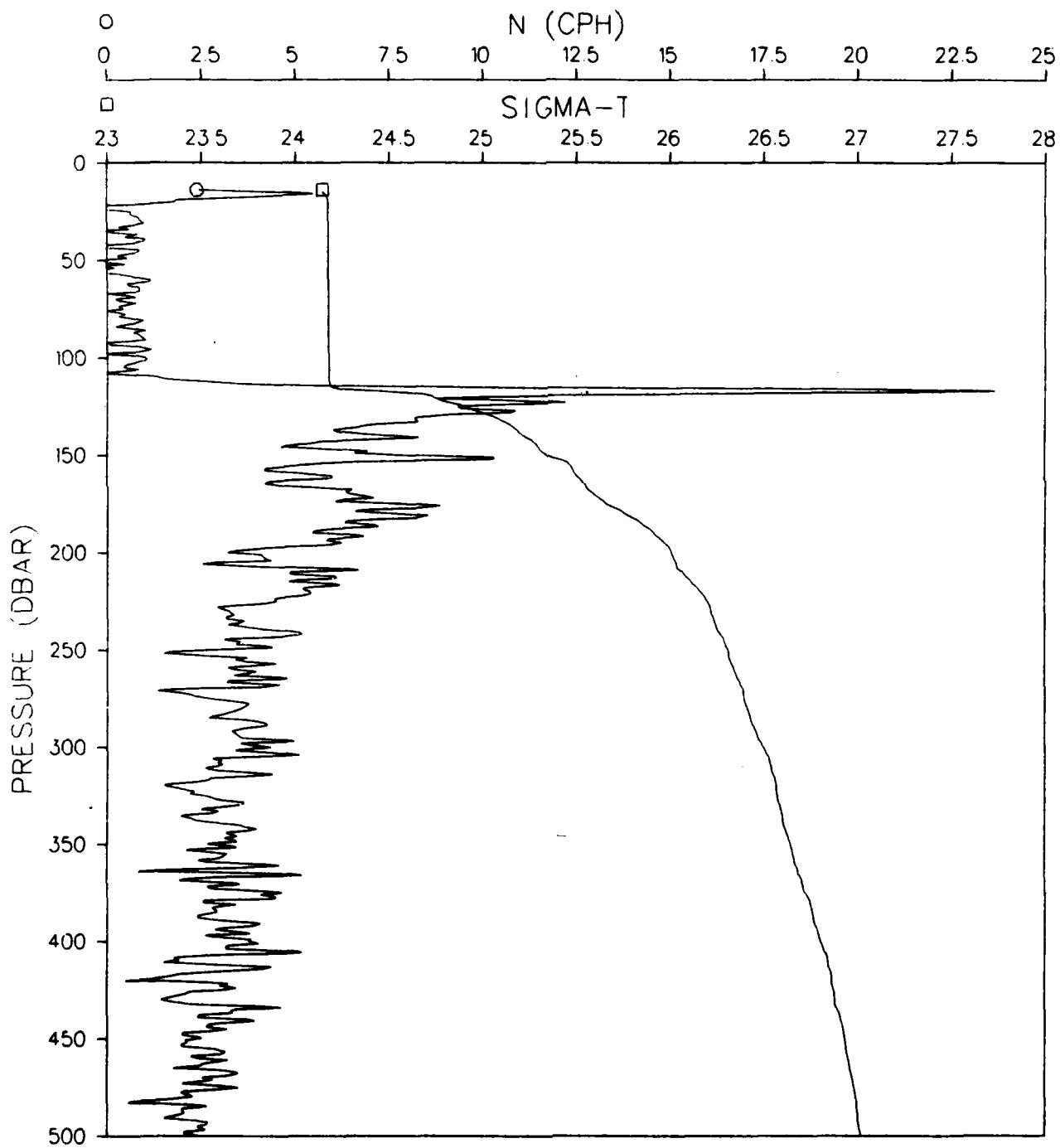


Figure 322.

ATOM 79 DEPLOYMENT
STATION 100019

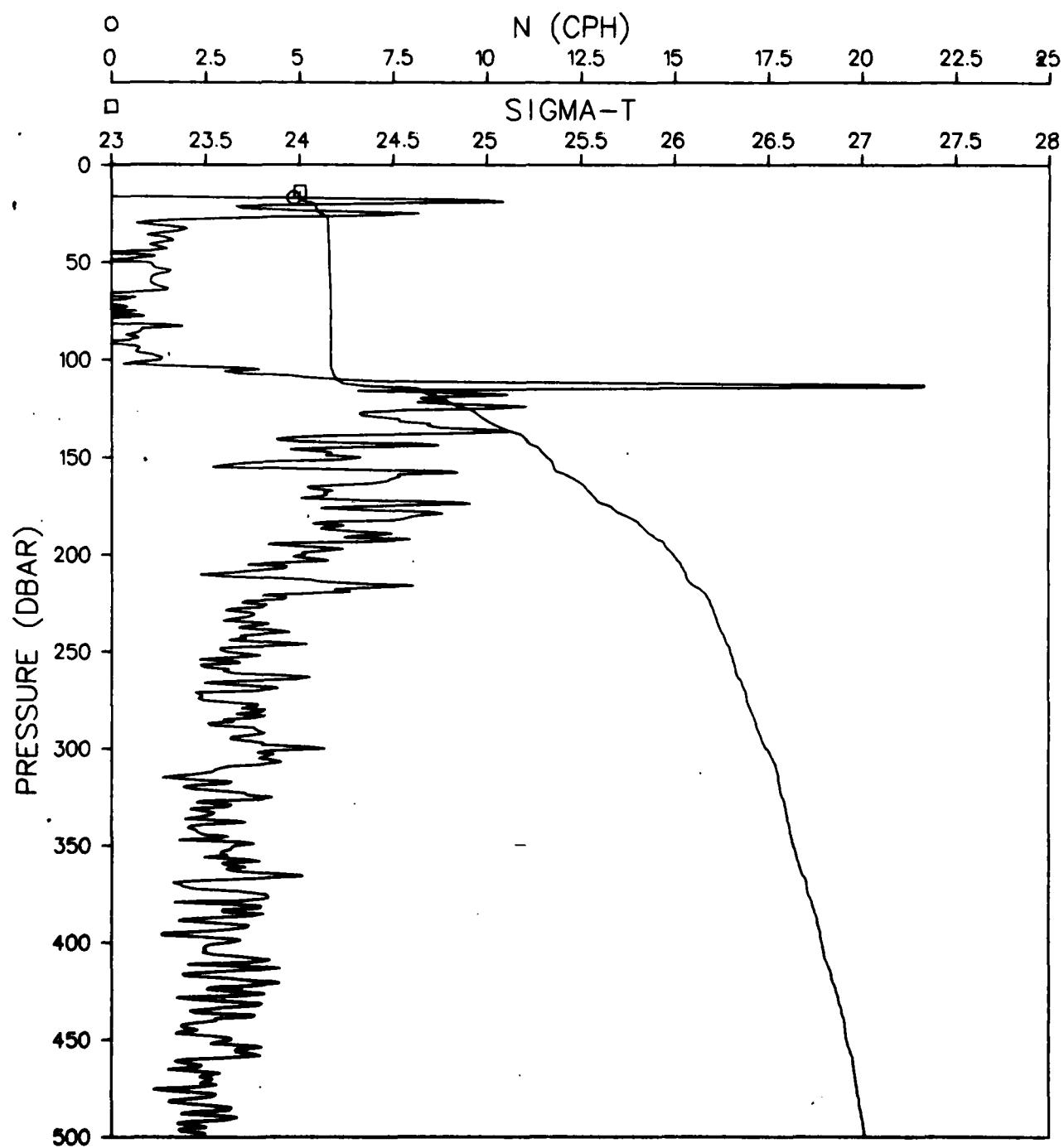


Figure 323.

ATOM 79 DEPLOYMENT
STATION 100020

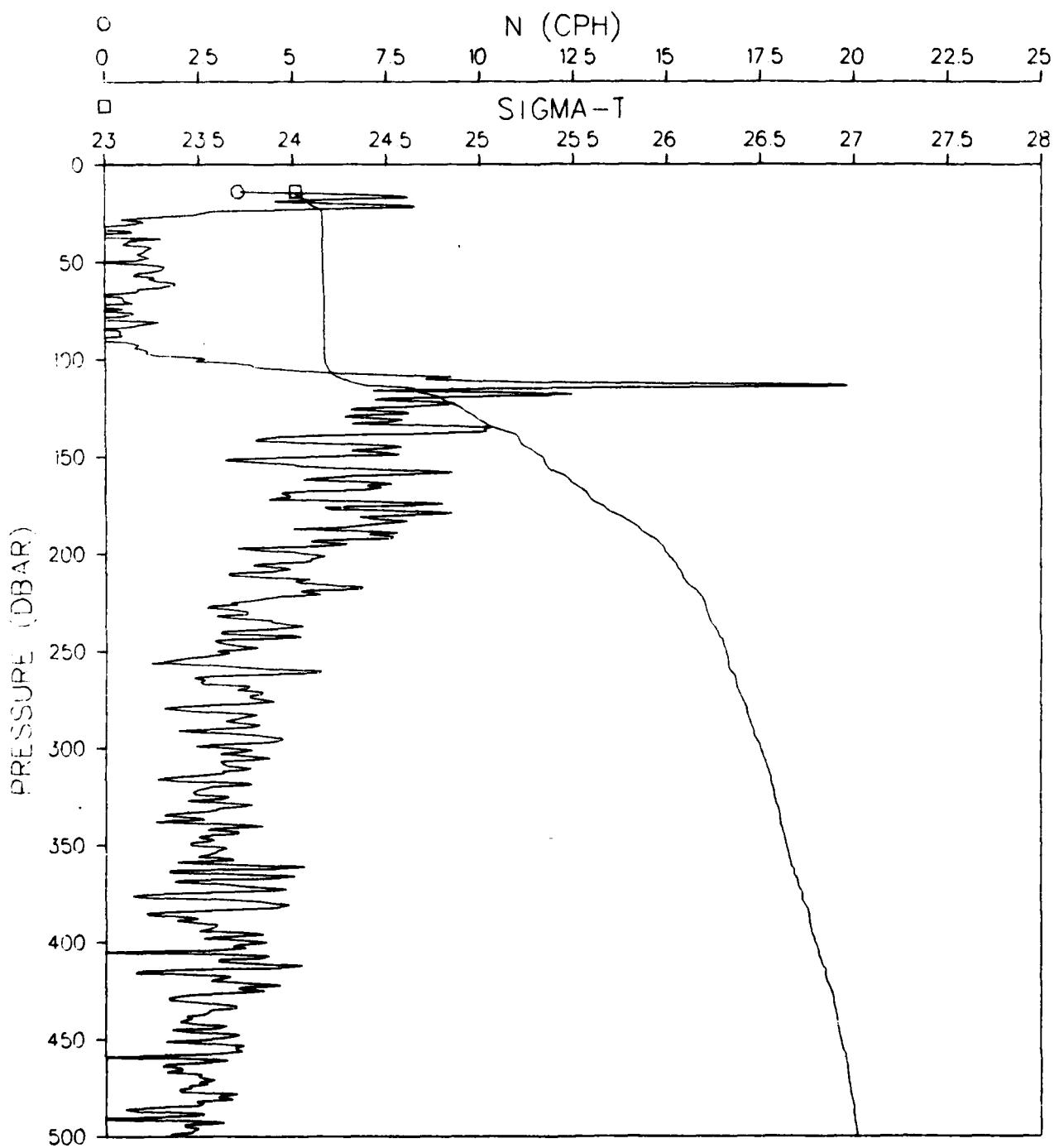


Figure 324.

ATOM 79 DEPLOYMENT
STATION 100021

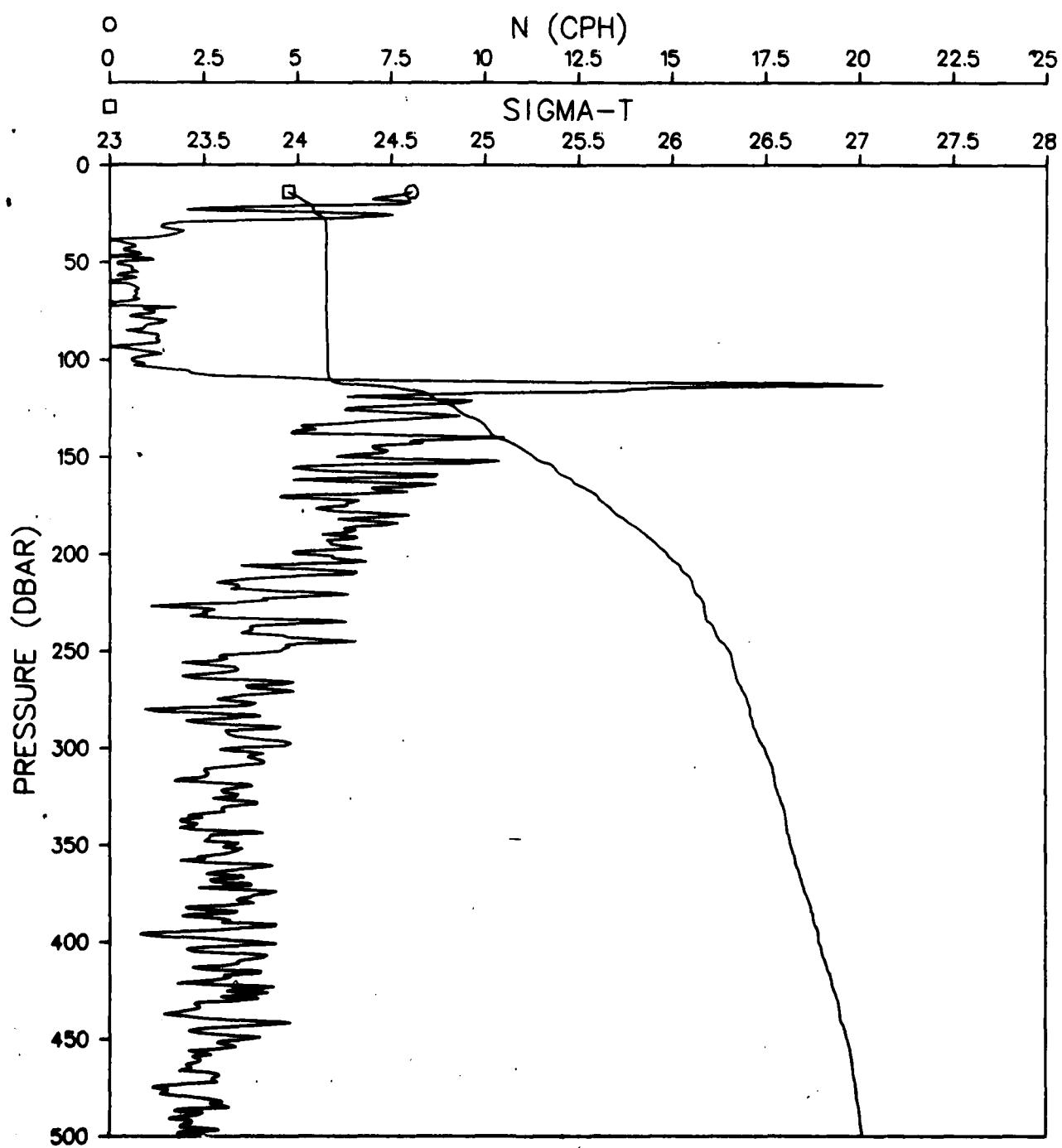


Figure 325.

ATOM 79 DEPLOYMENT
STATION 100022

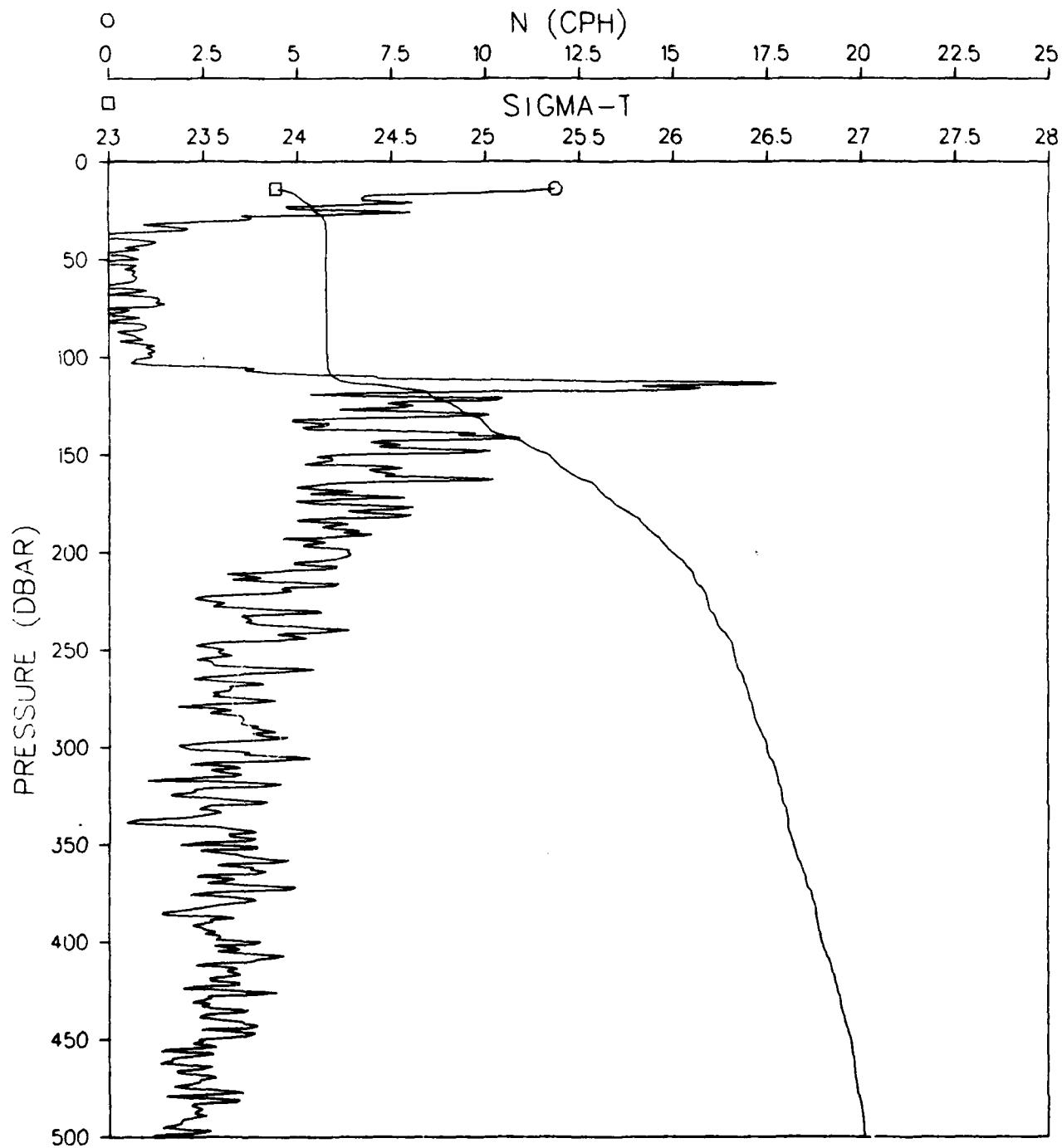


Figure 326.

ATOM 79 DEPLOYMENT
STATION 100023

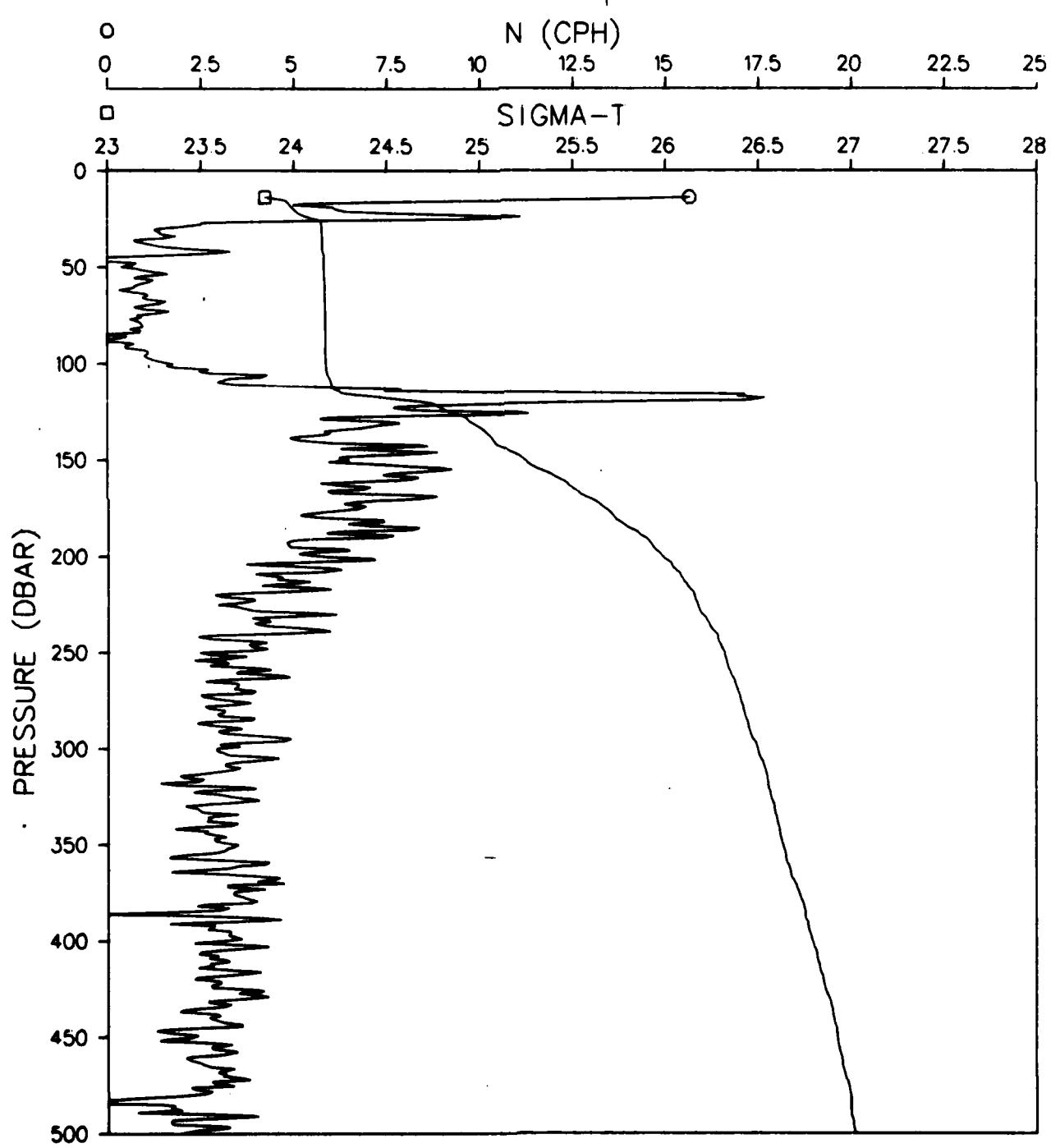


Figure 327.

ATOM 79 DEPLOYMENT
STATION 100024

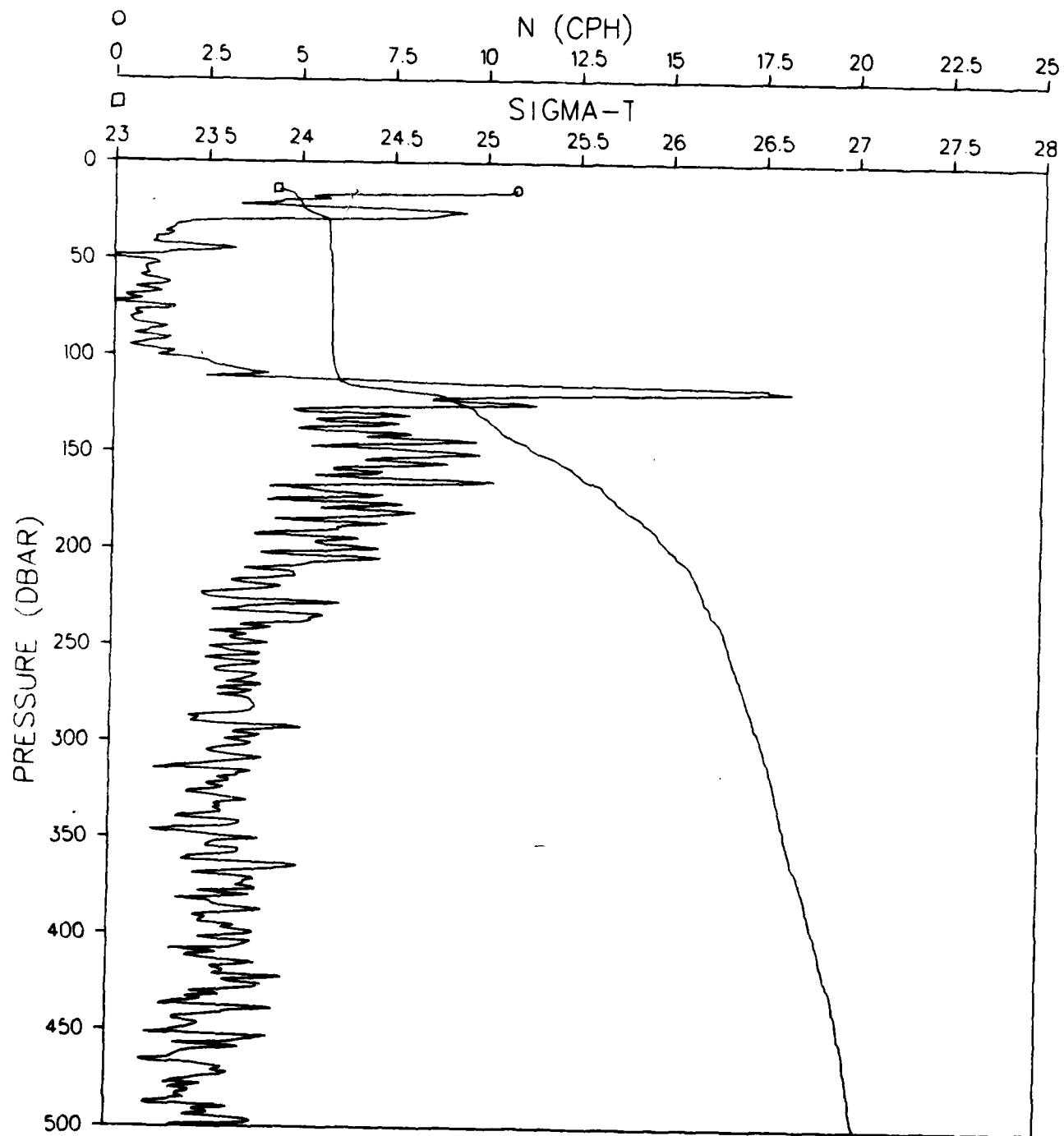


Figure 328.

ATOM 79 DEPLOYMENT
STATION 100025

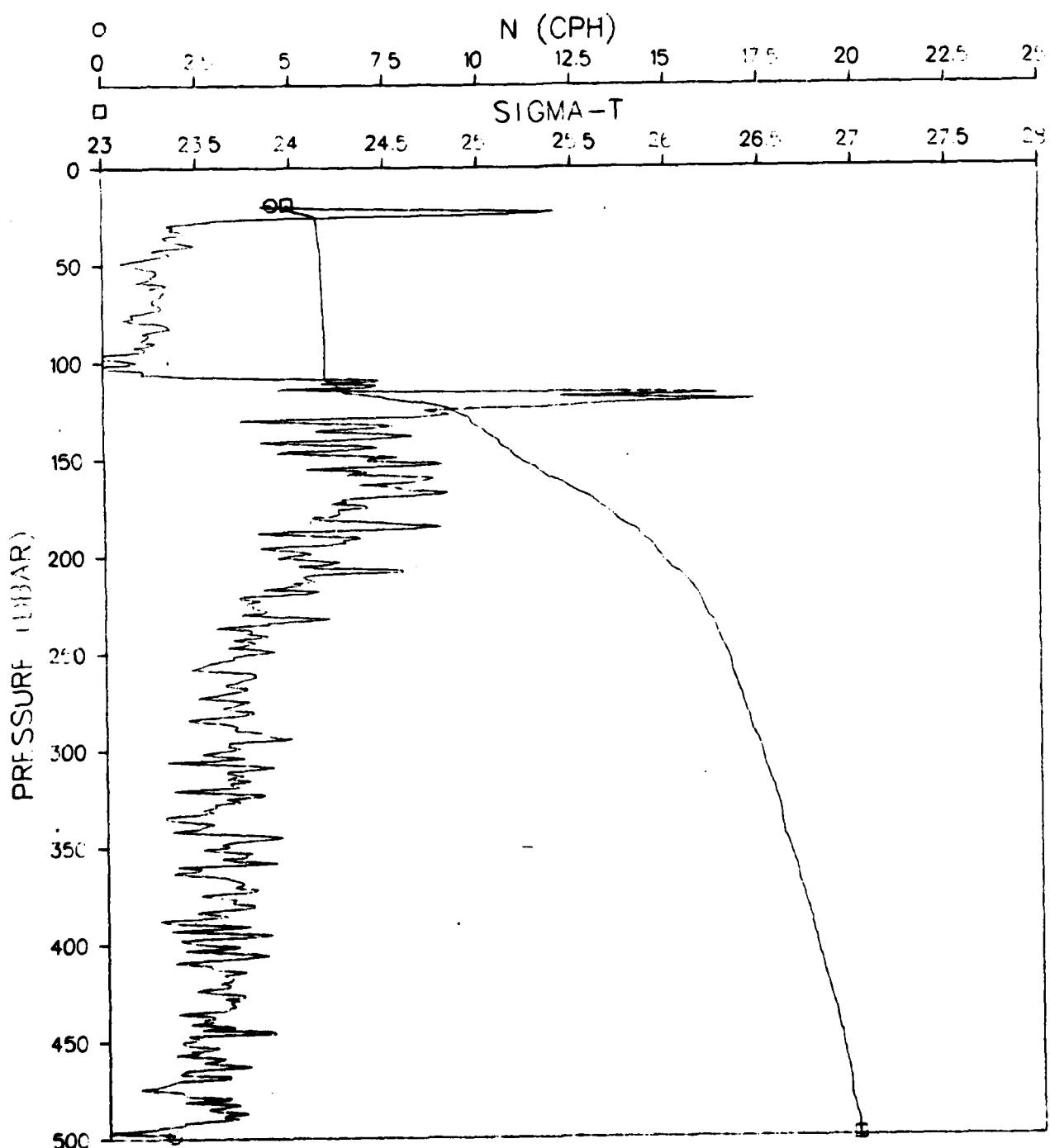


Figure 329.

ATOM 79 DEPLOYMENT
STATION 100026

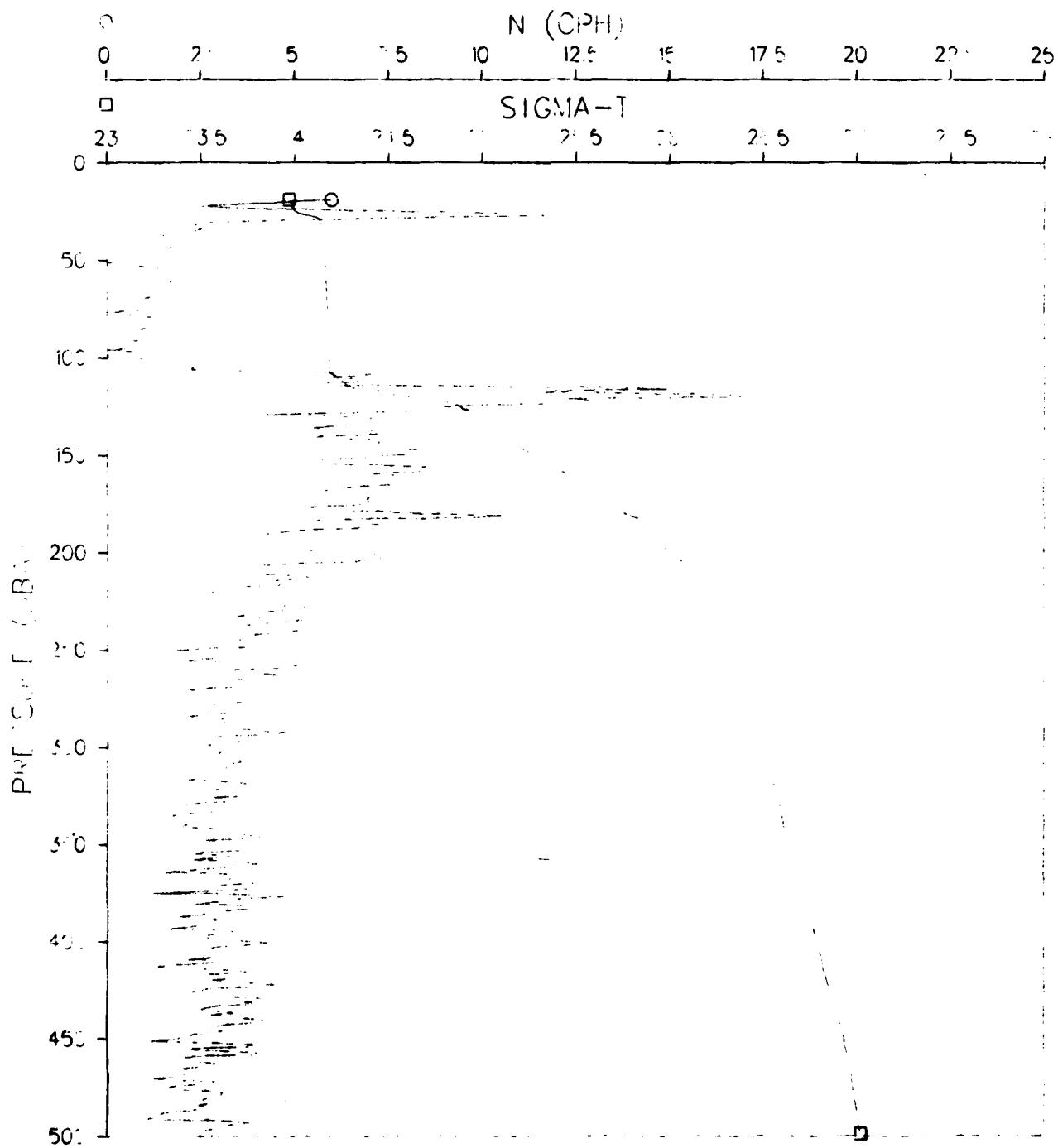


Figure 330.

ATOM 79 DEPLOYMENT
STATION 100027

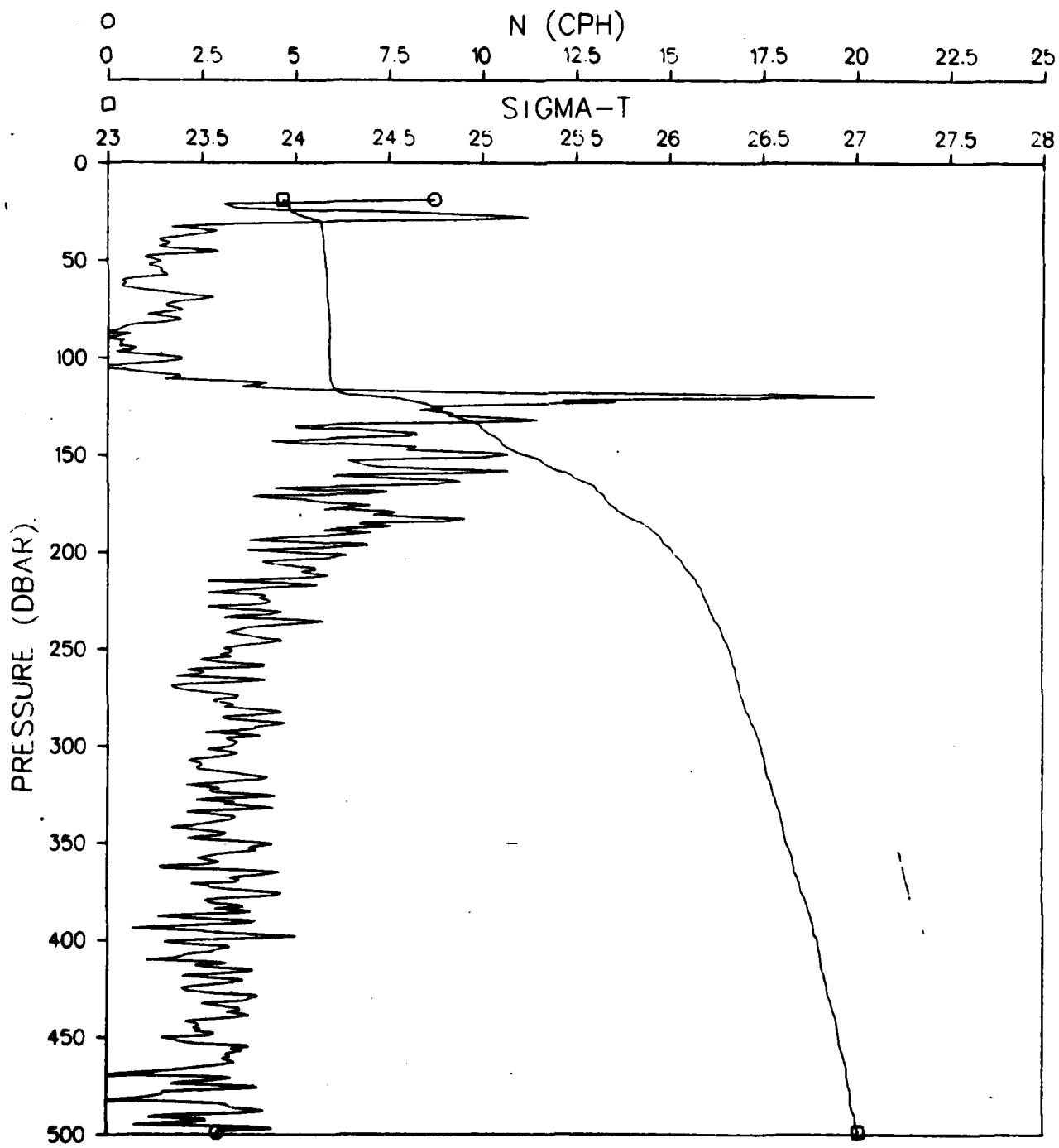


Figure 331.

ATOM 79 DEPLOYMENT
STATION 100028

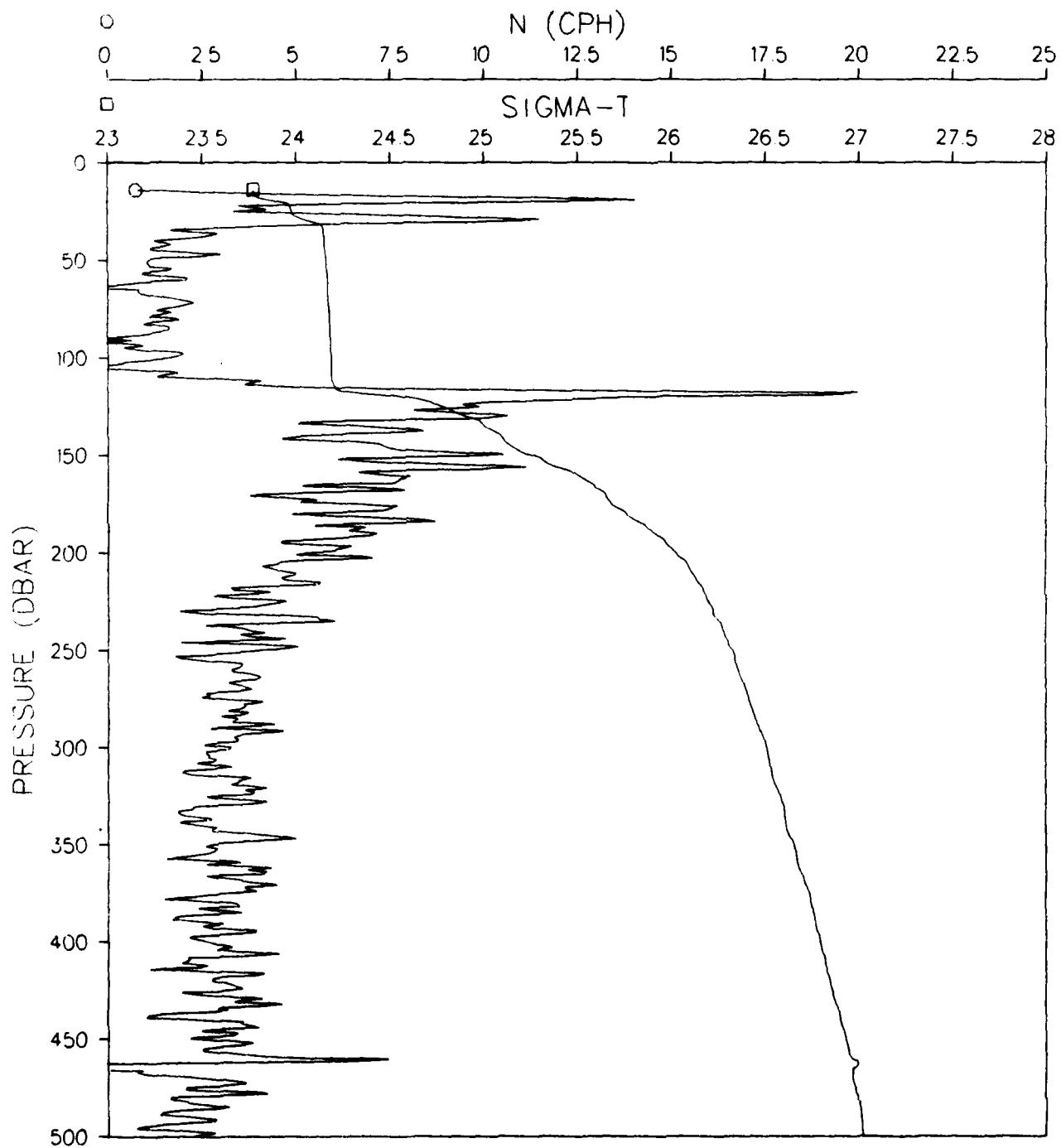


Figure 332.

ATOM 79 DEPLOYMENT
STATION 100029

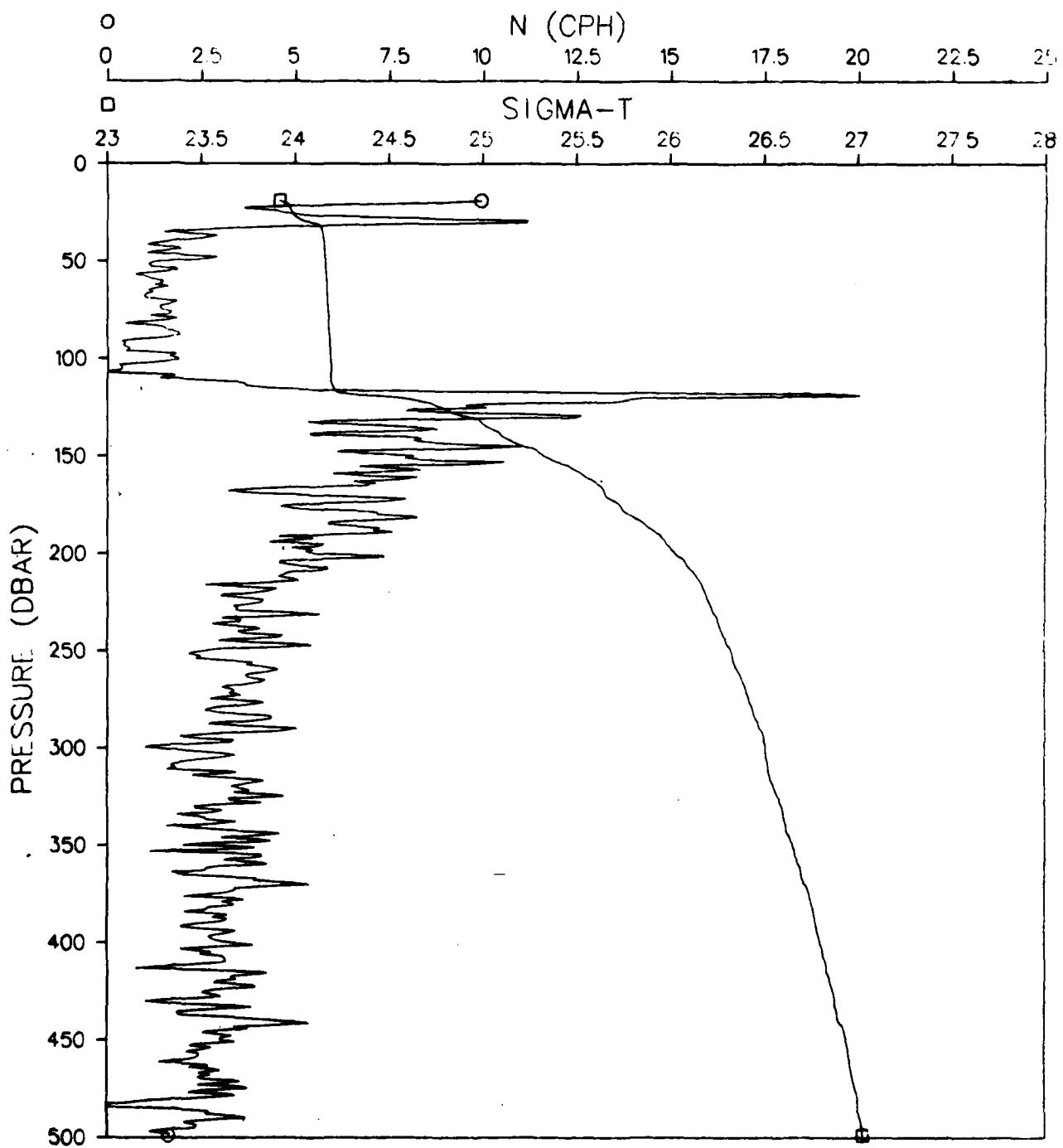


Figure 333.

ATOM 79 DEPLOYMENT
STATION 100030

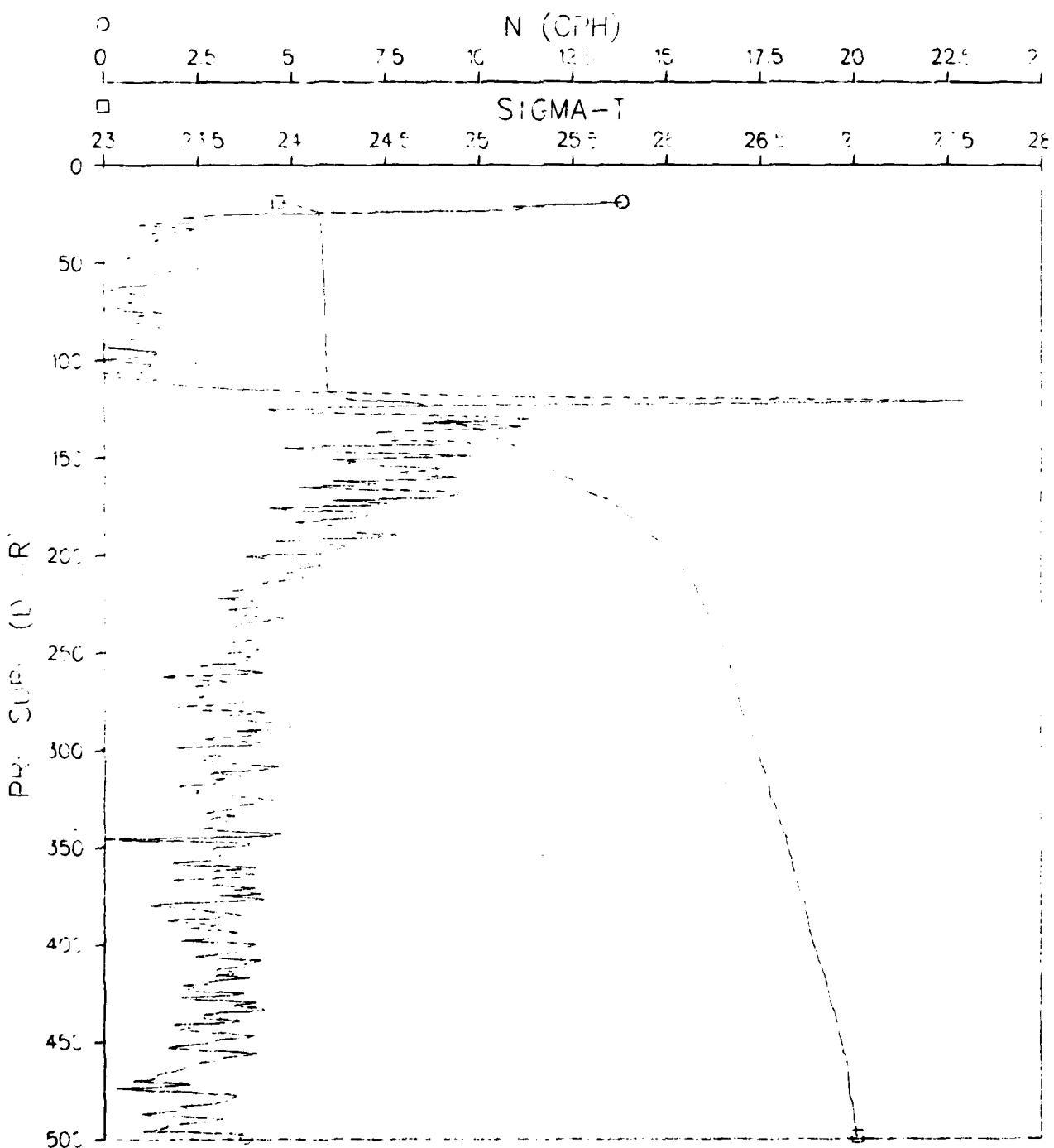


Figure 334.

ATOM 79 DEPLOYMENT
STATION 100031

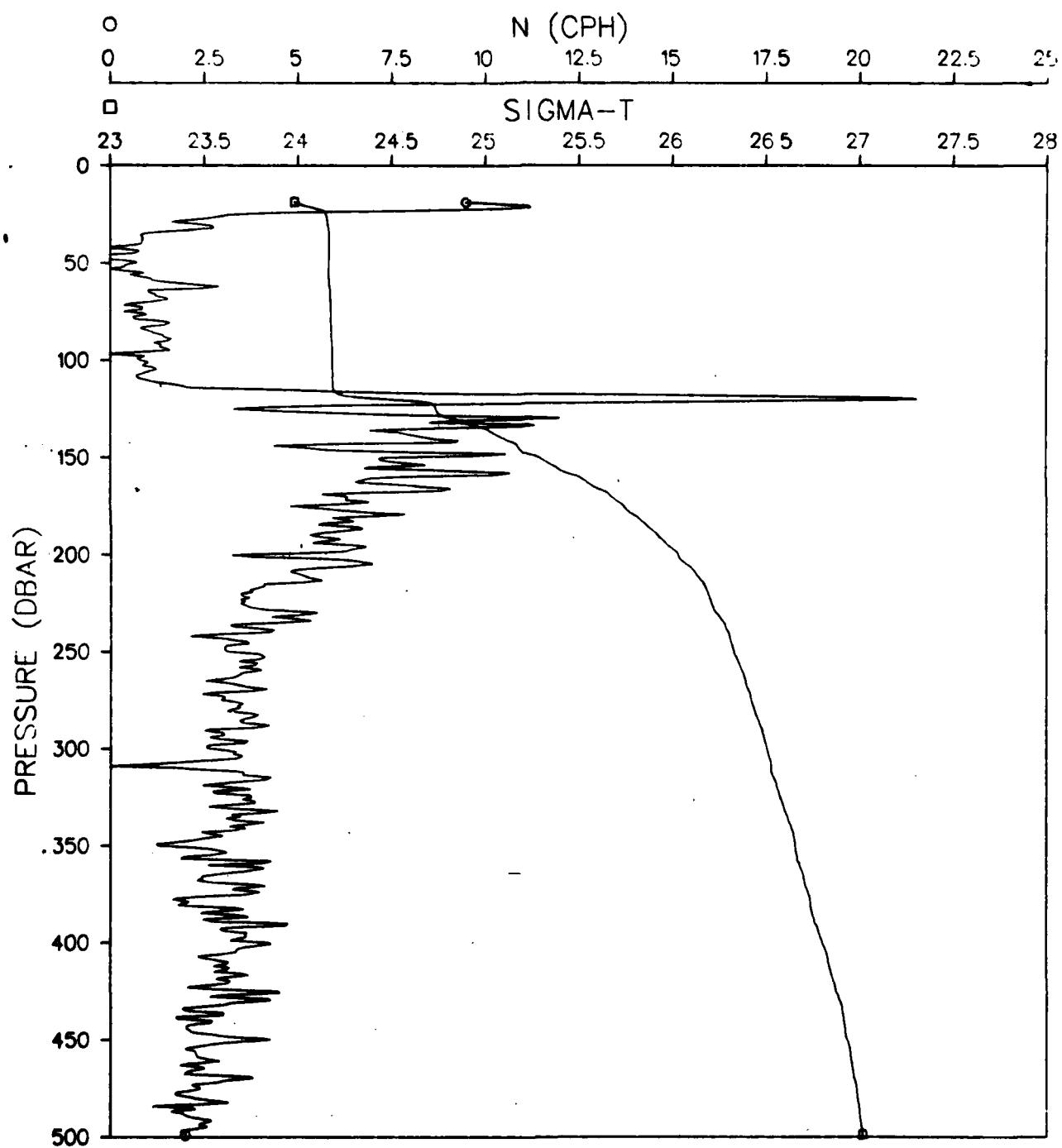


Figure 335.

ATOM 74 DEPLOYMENT
STATION 1000-2

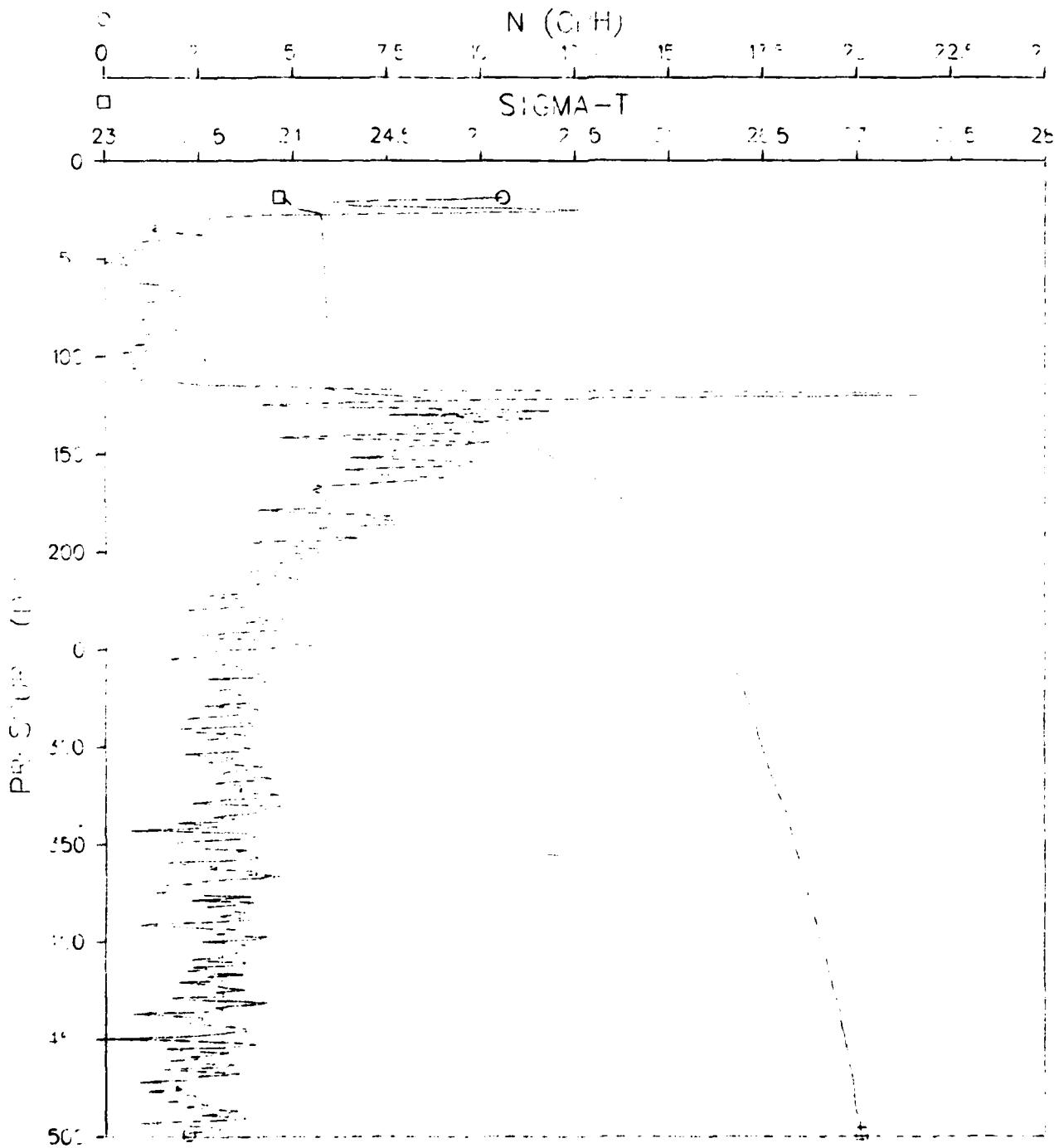


Figure 336.

ATOM 79 DEPLOYMENT
STATION 100033

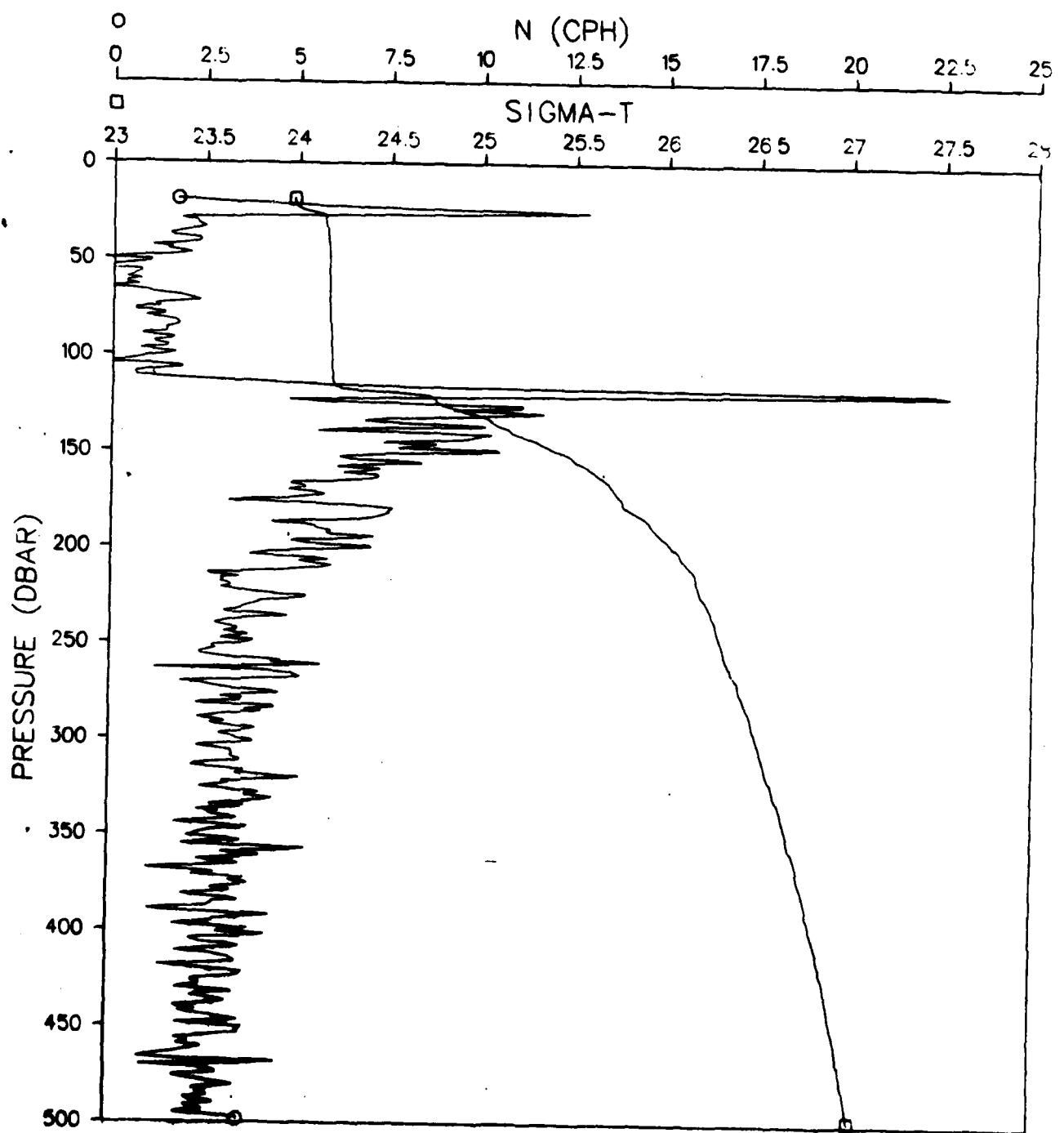


Figure 337.

ATOM 79 DEPLOYMENT
STATION 100034

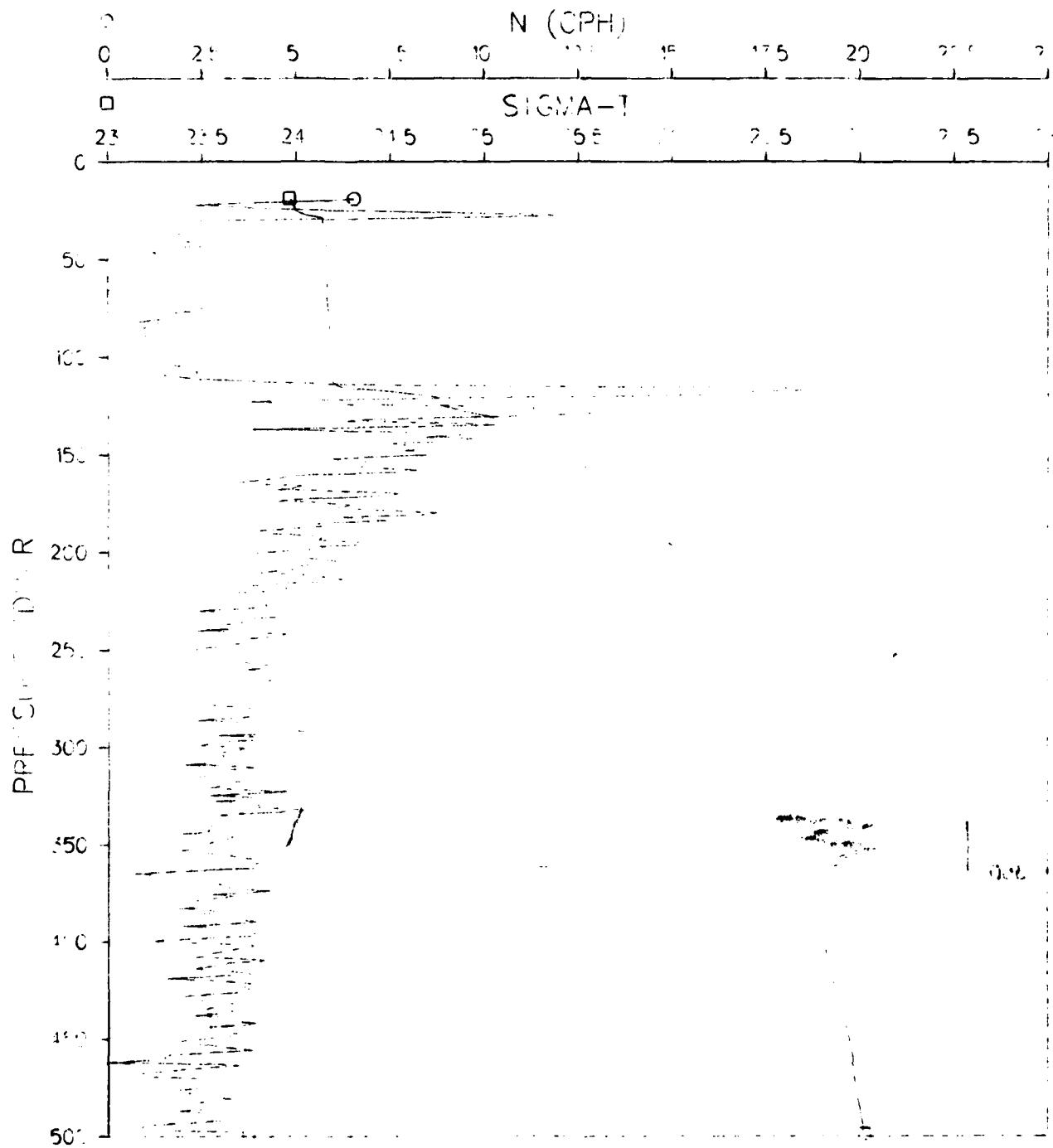


Figure 338.

354

161

ATOM 79 DEPLOYMENT
STATION 100001

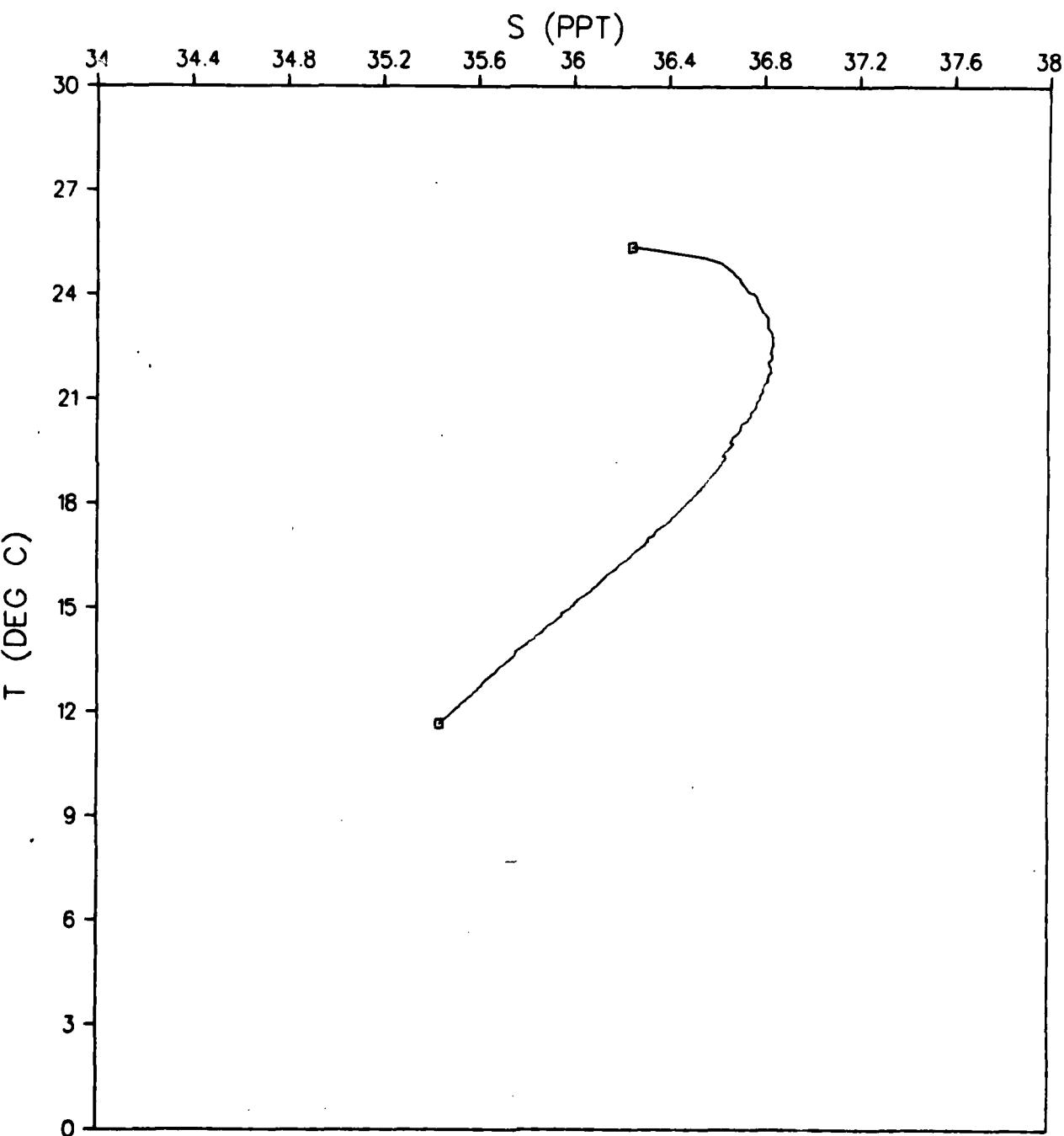


Figure 339.

ATOM 79 DEPLOYMENT
STATION 100005

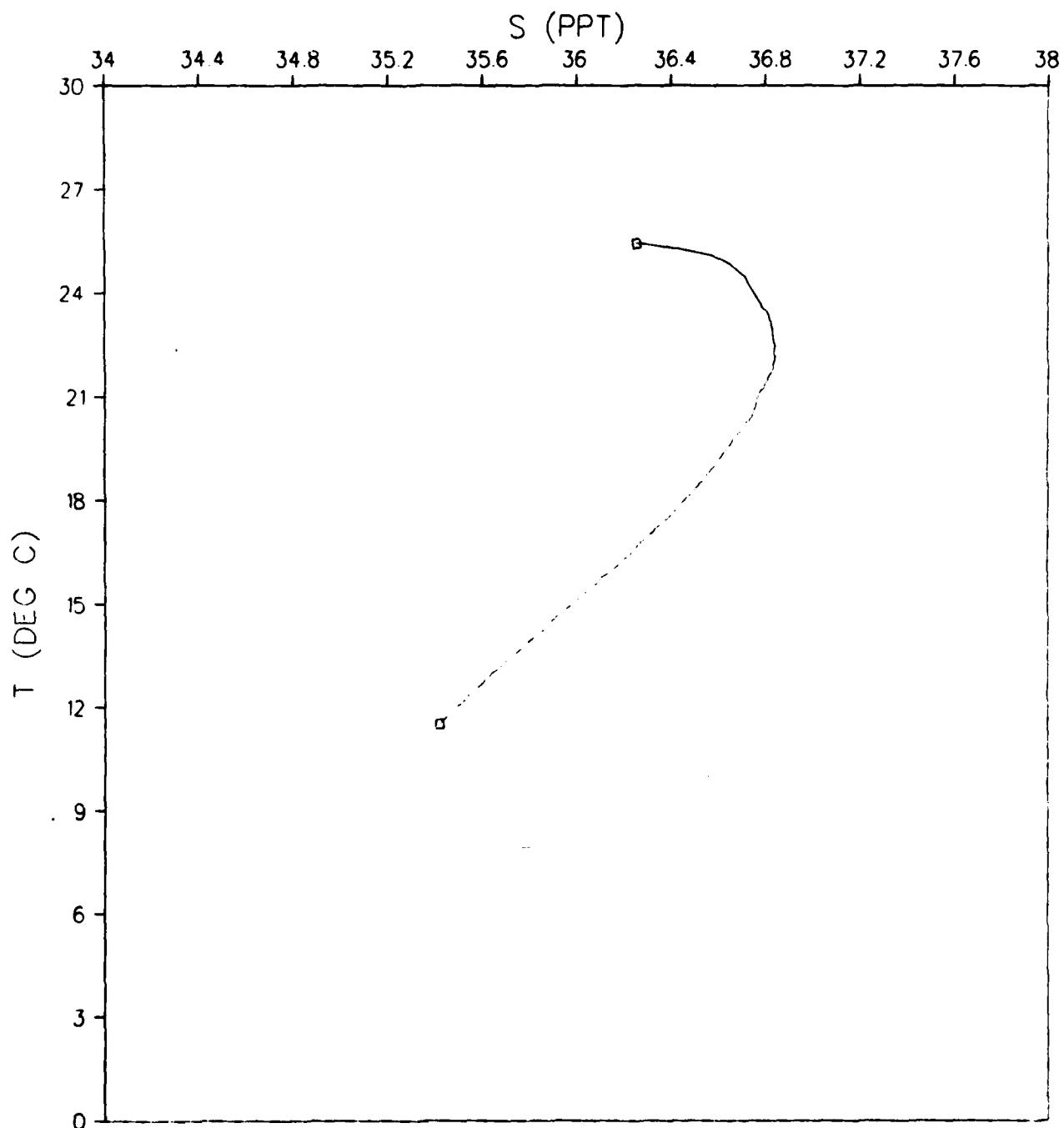


Figure 340.

ATOM 79 DEPLOYMENT
STATION 100006

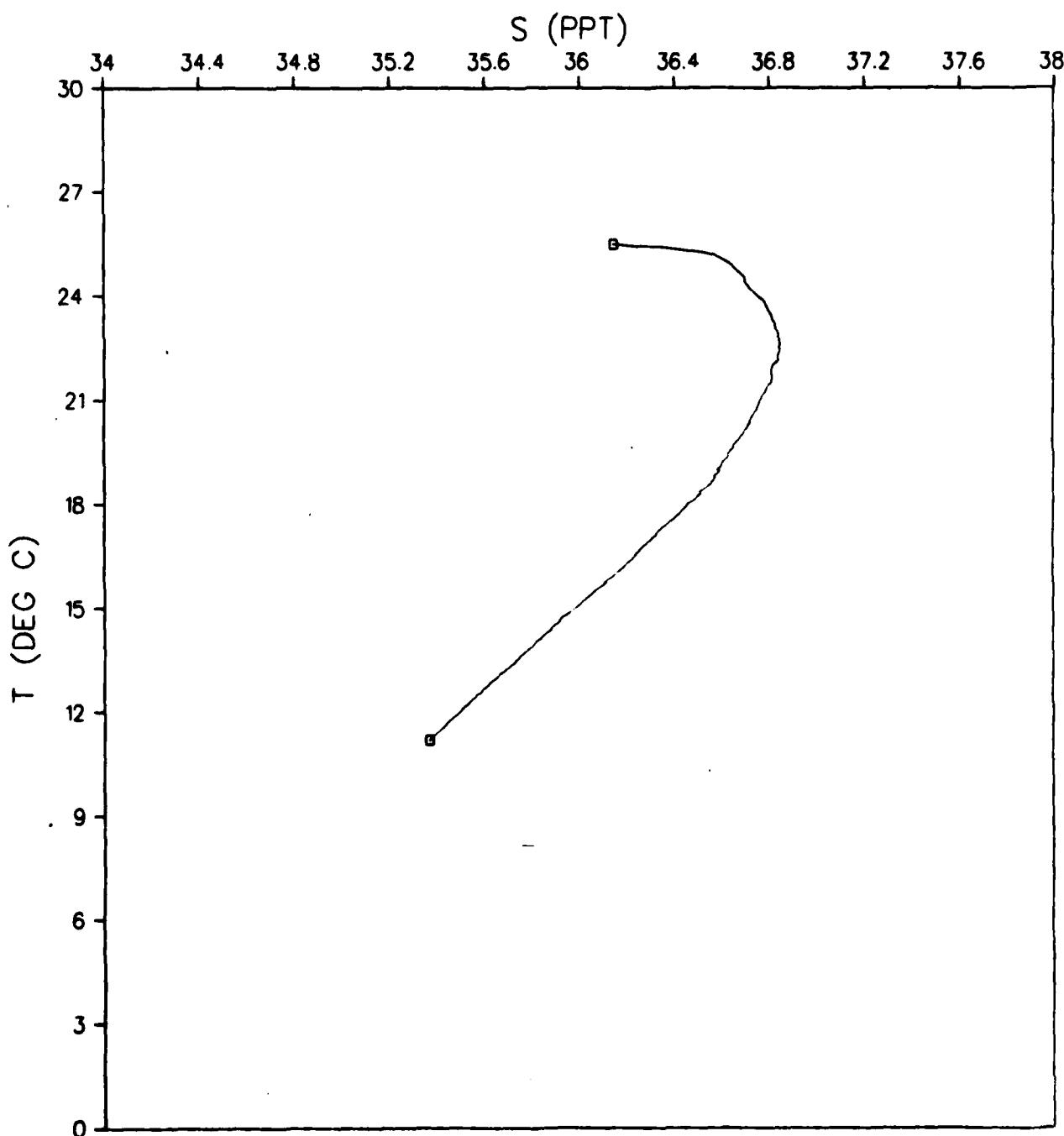


Figure 341.

ATOM 79 DEPLOYMENT
STATION 100007

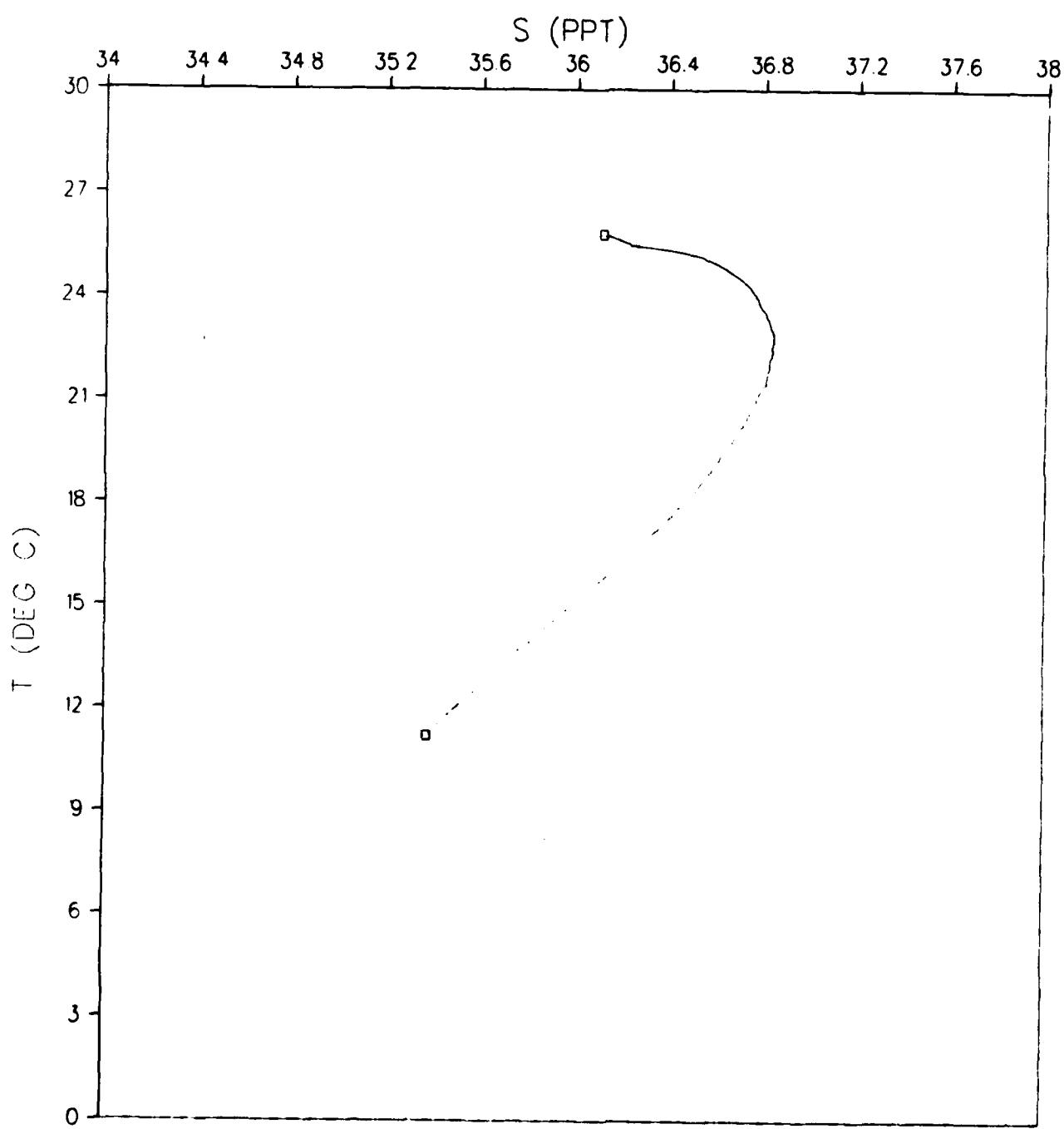


Figure 342.

ATOM 79 DEPLOYMENT
STATION 100008

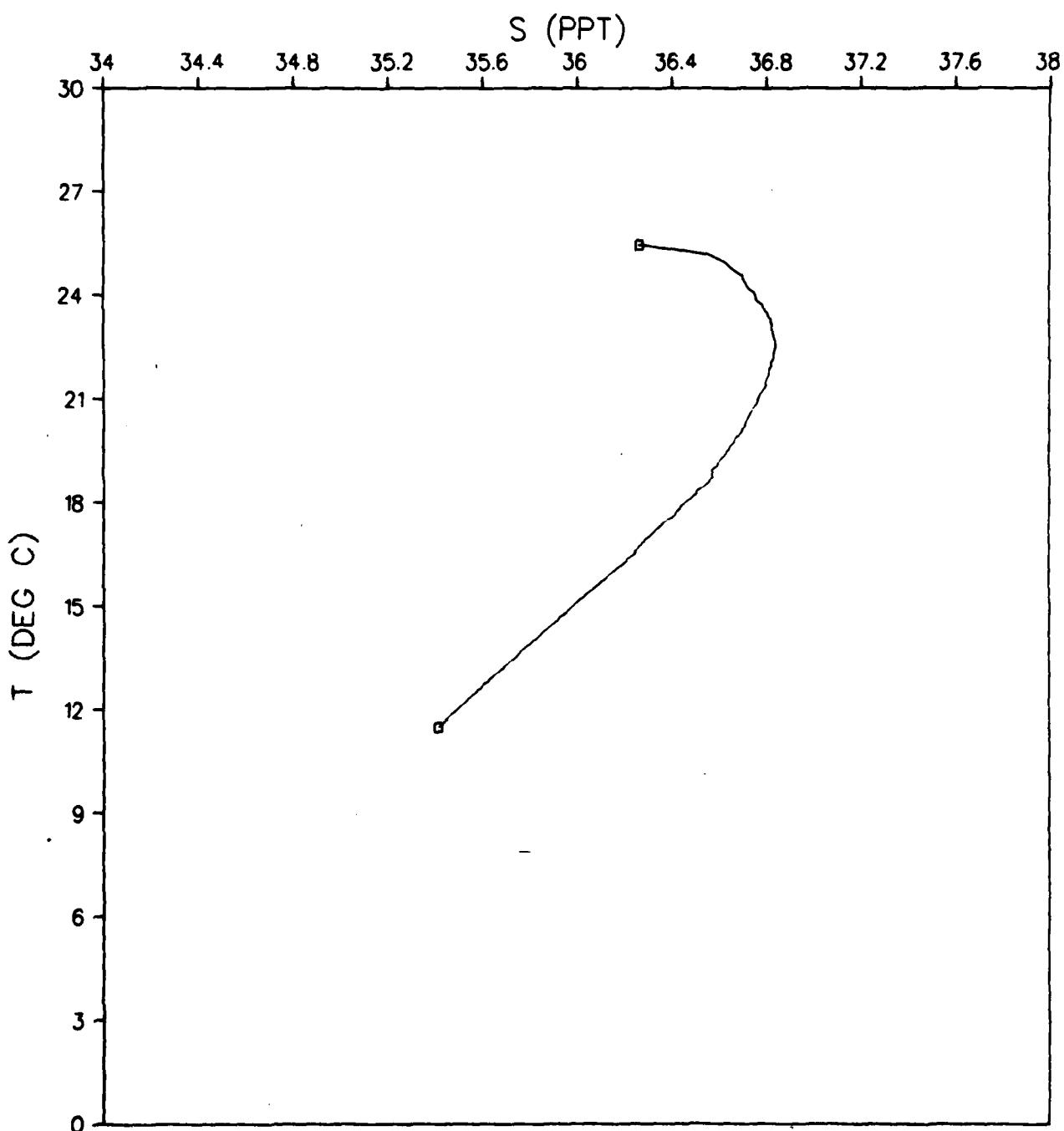


Figure 343.

ATOM 79 DEPLOYMENT
STATION 100009

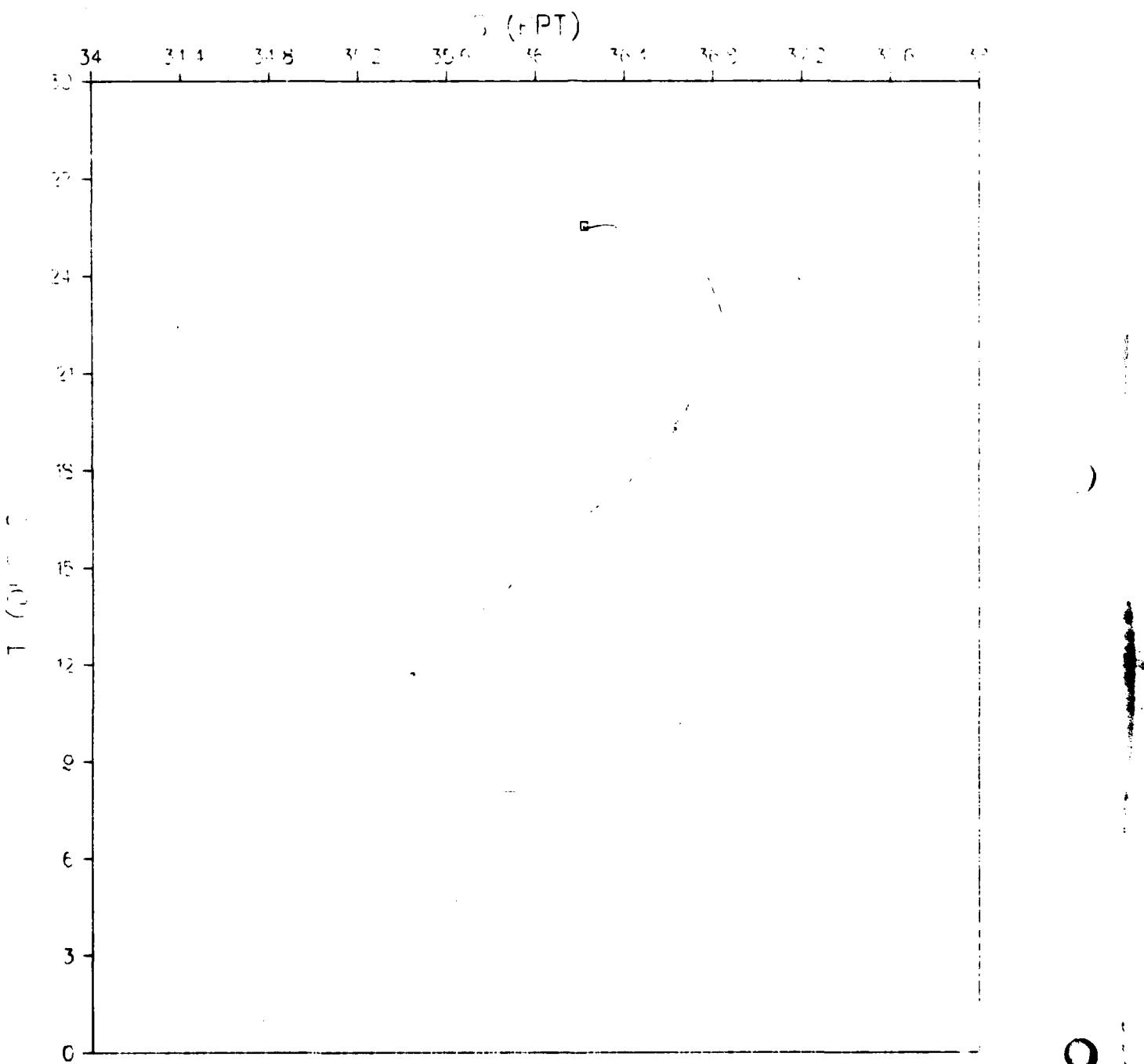


Figure 344.

ATOM 79 DEPLOYMENT
STATION 100010

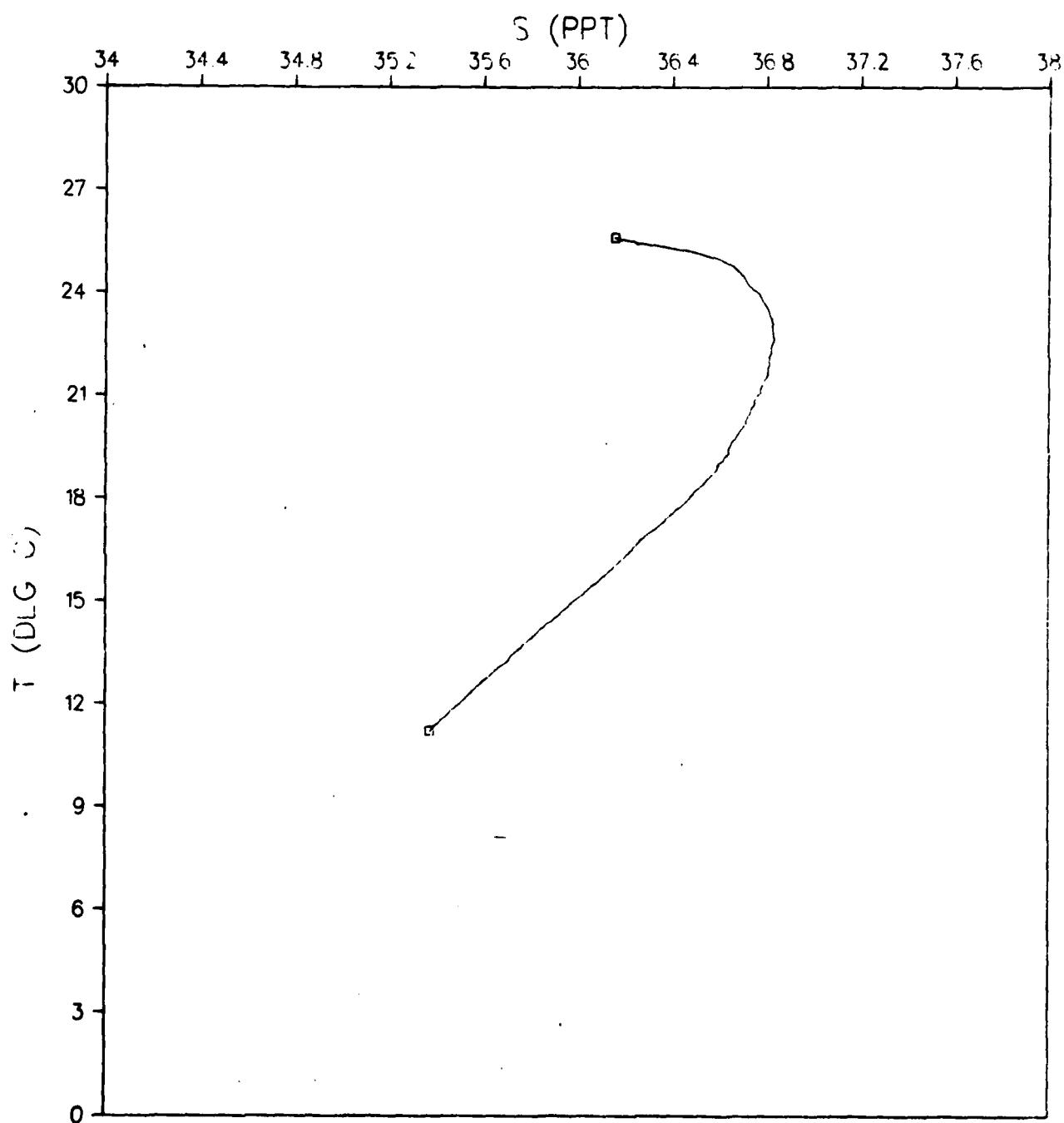


Figure 345.

ATOM 79 DEPLOYMENT
STATION 100011

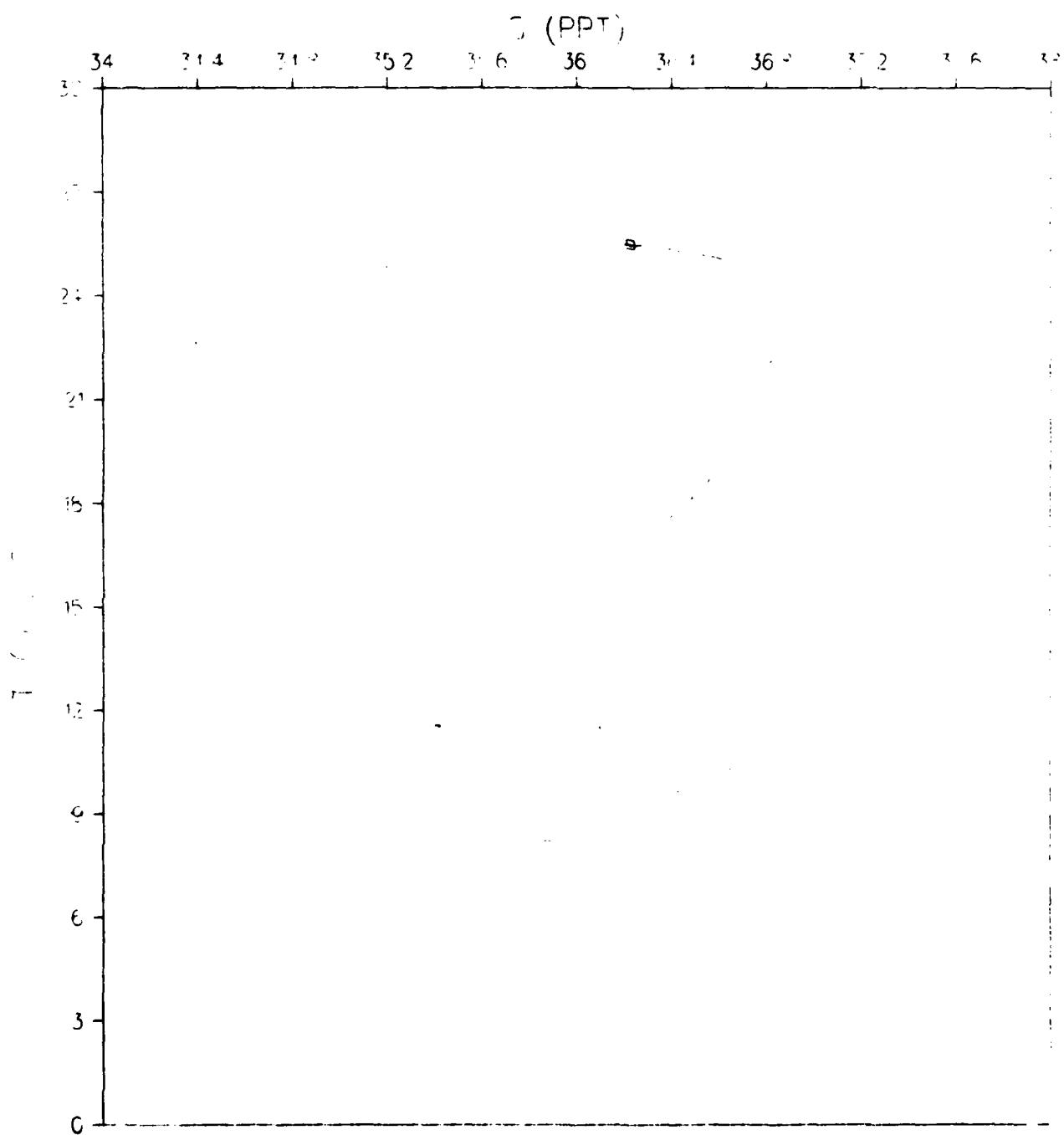


Figure 346.

ATOM 79 DEPLOYMENT
STATION 100012

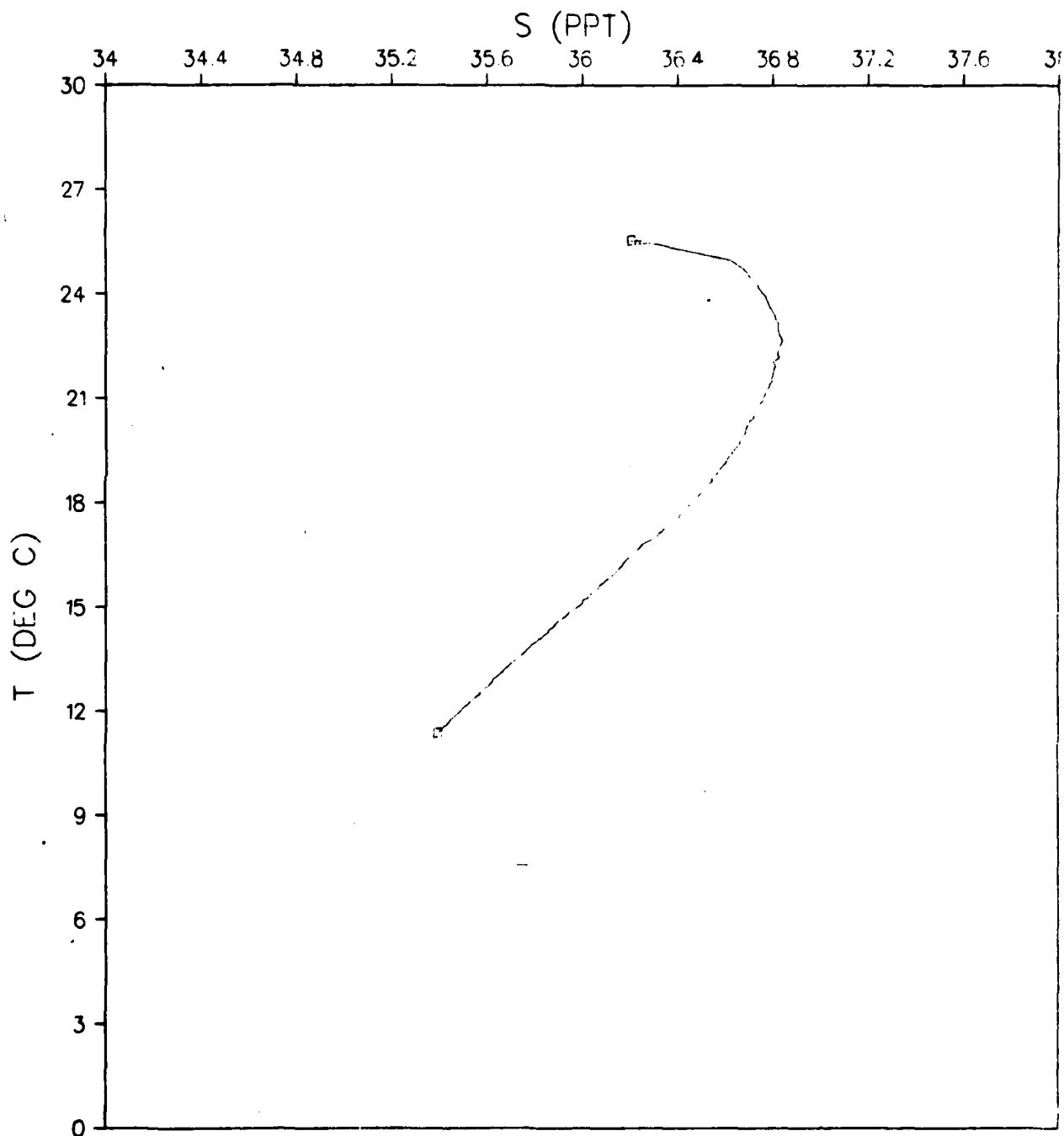


Figure 347.

ATOM 79 DEPLOYMENT
STATION 100013

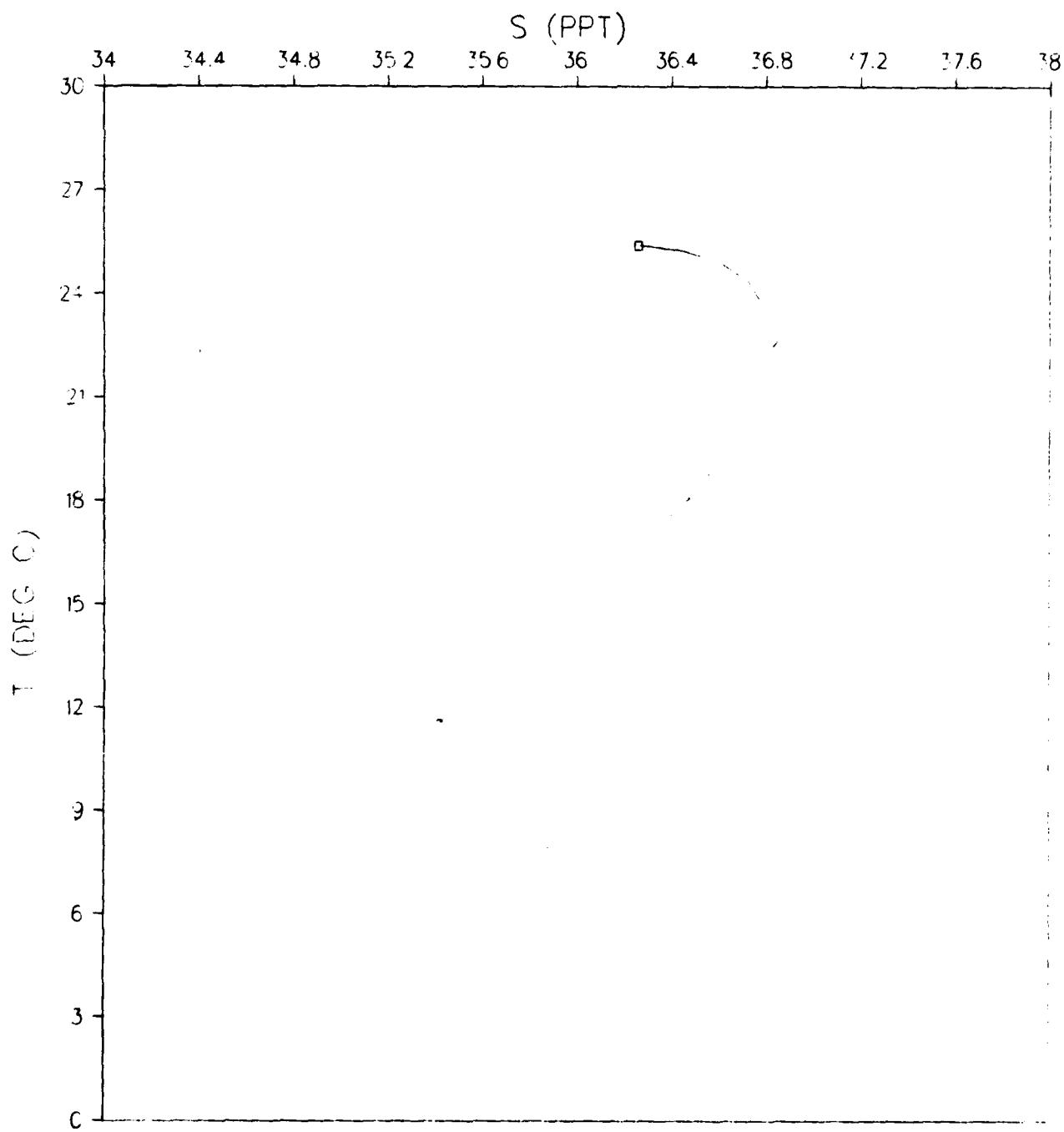


Figure 348.

ATOM 79 DEPLOYMENT
STATION 100014

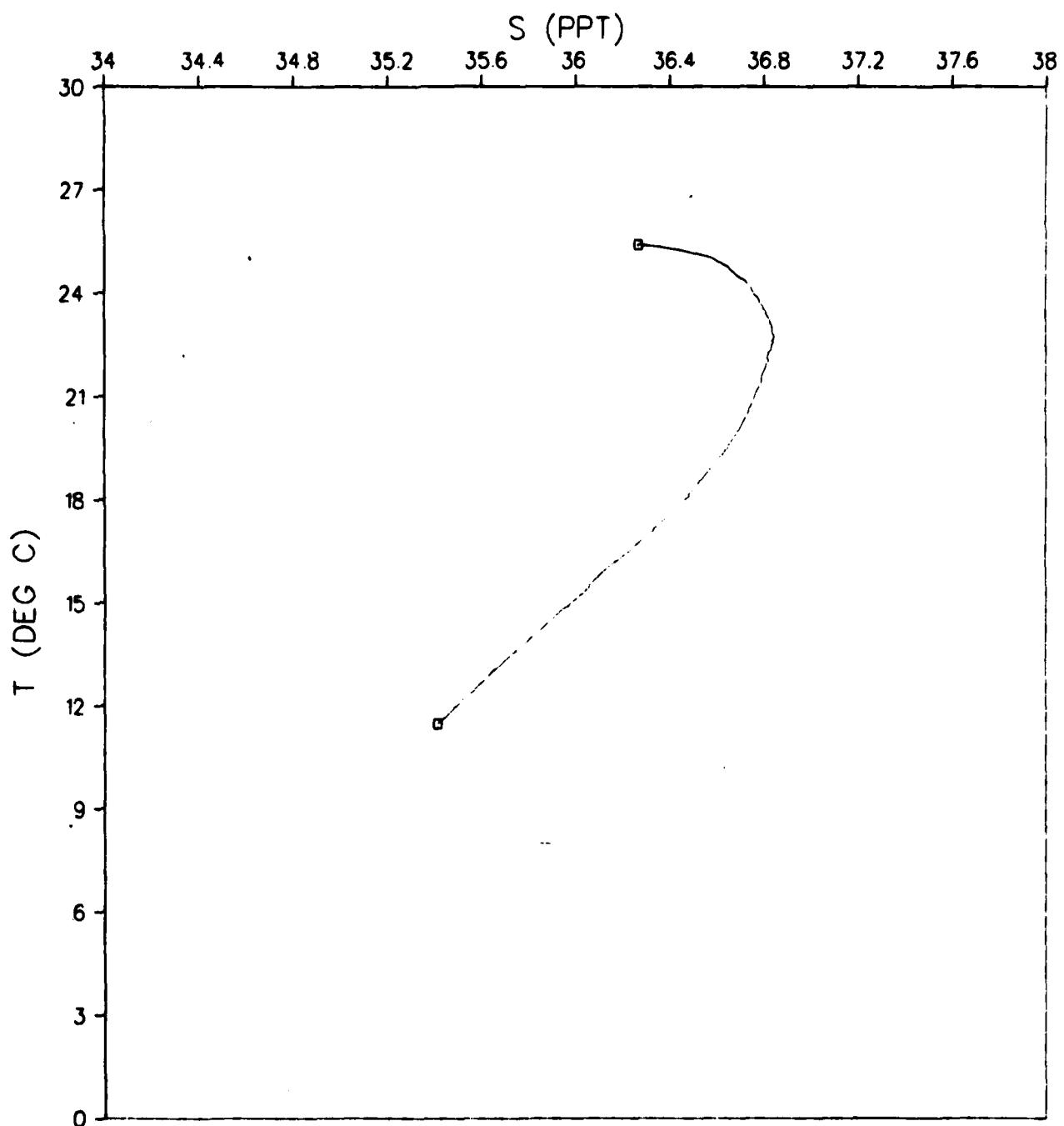


Figure 349.

ATOM 79 DEPLOYMENT
STATION 100015

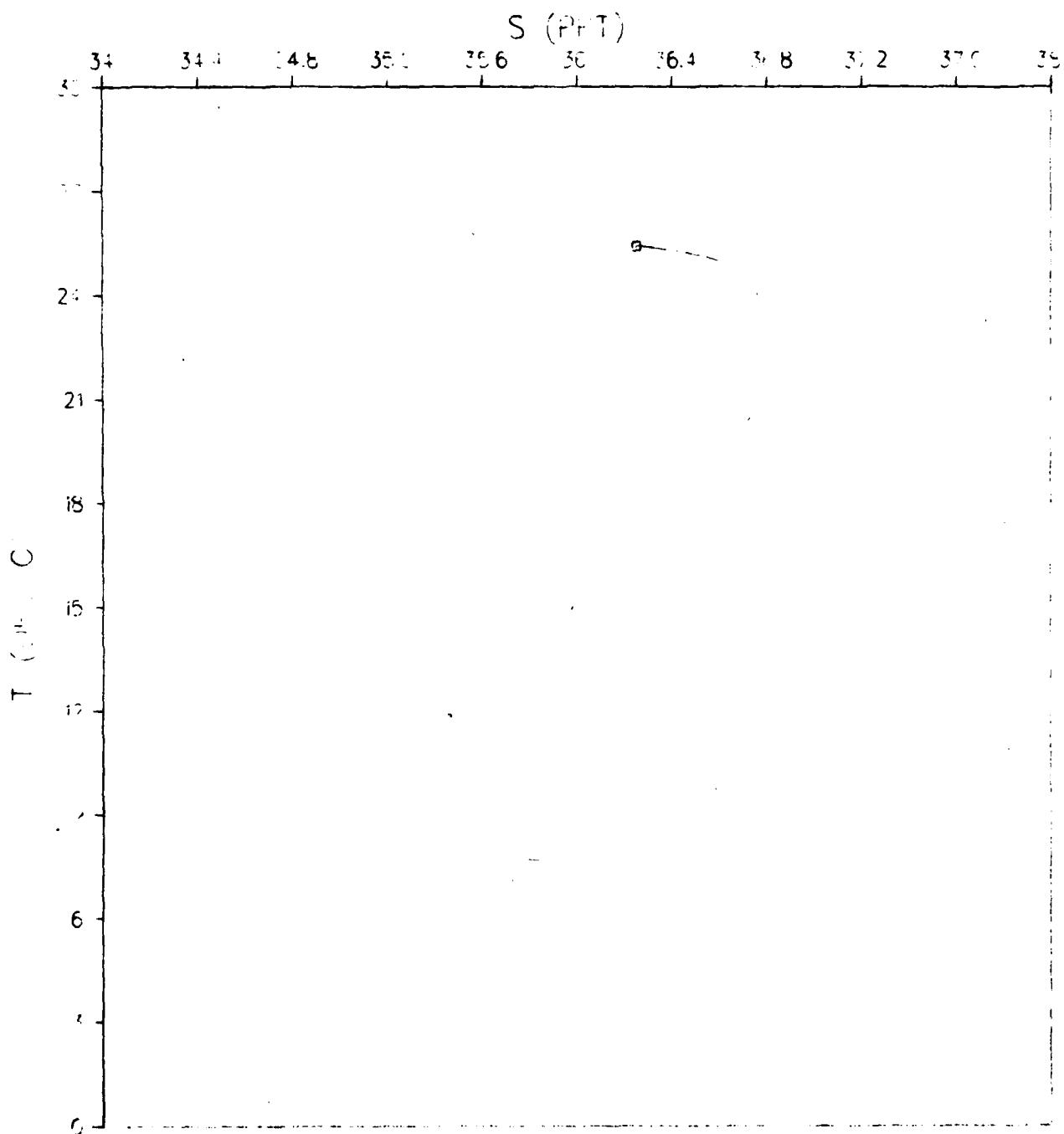


Figure 350.

ATOM 79 DEPLOYMENT
STATION 100016

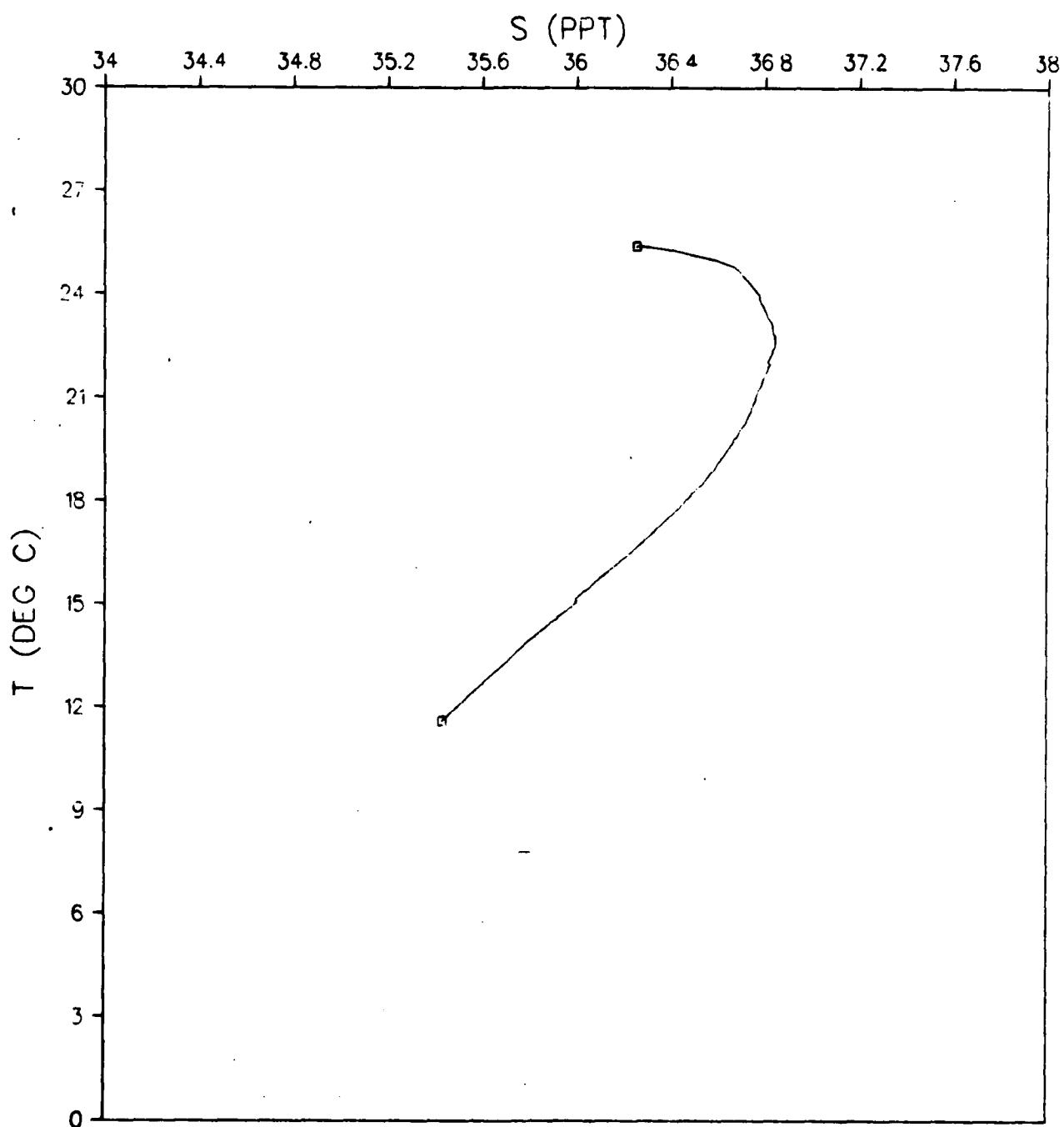


Figure 351.

ATOM 79 DEPLOYMENT
STATION 100017

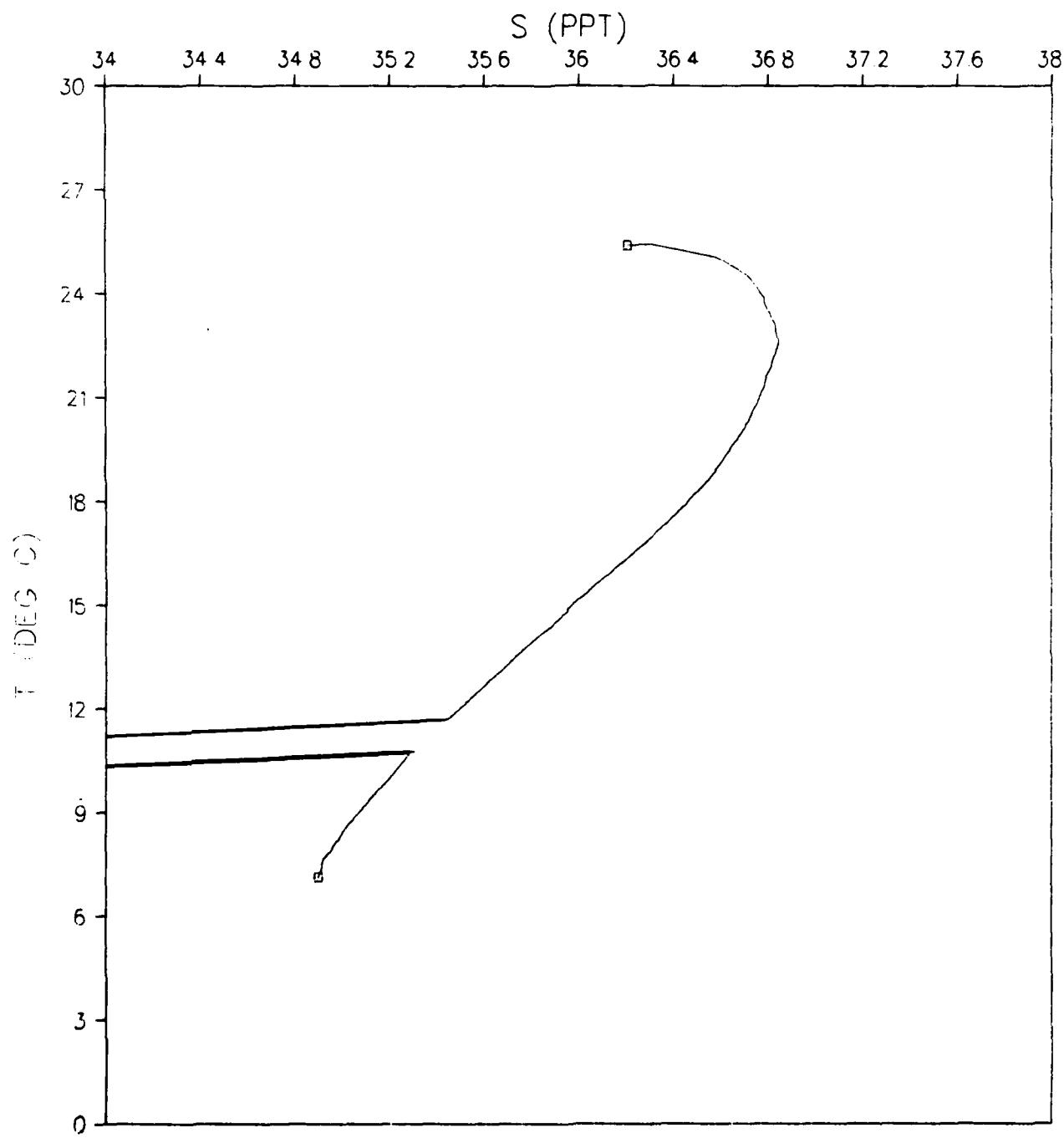


Figure 352.

ATOM 79 DEPLOYMENT
STATION 100018

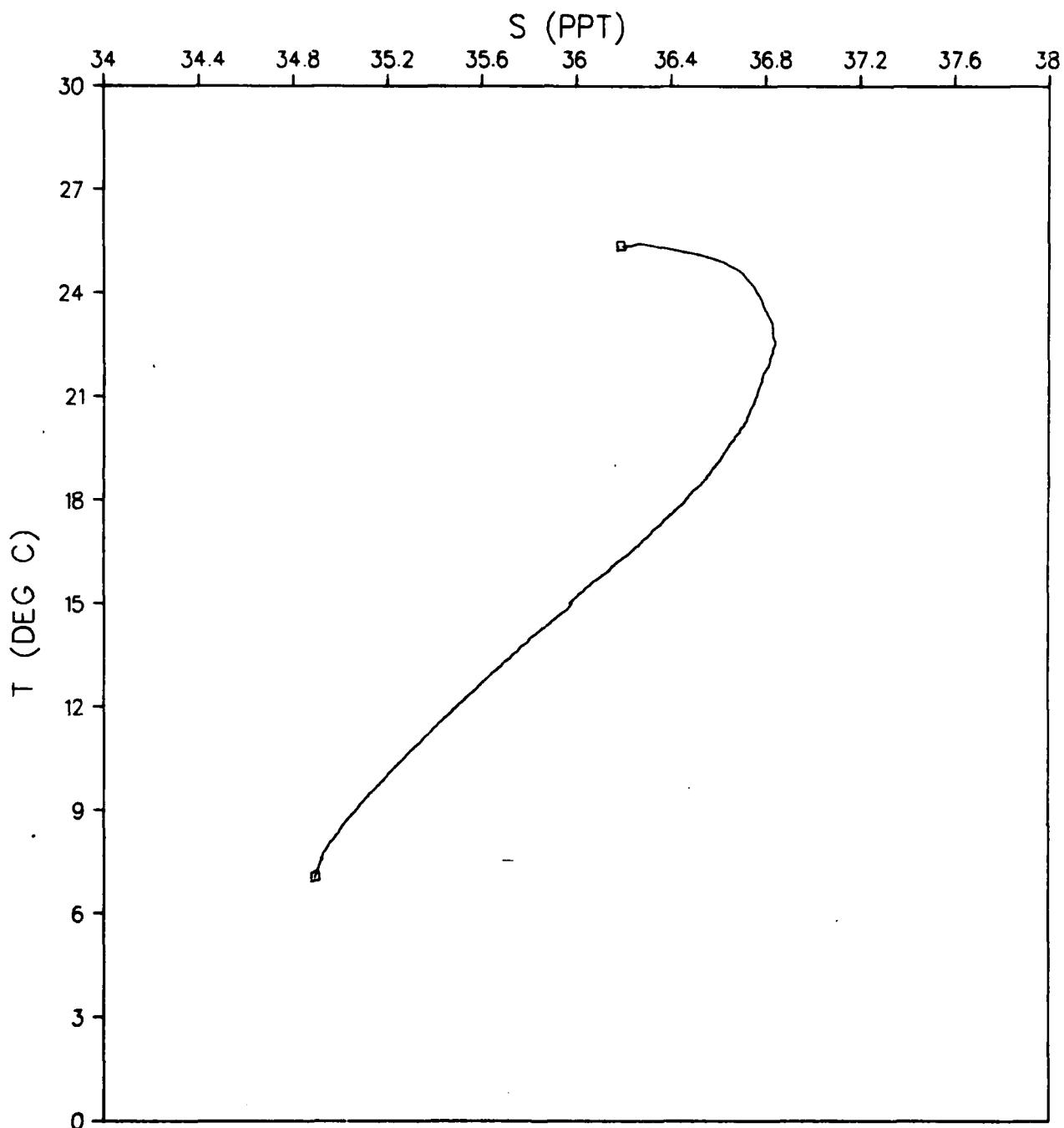


Figure 353.

ATOM 79 DEPLOYMENT
STATION 100019

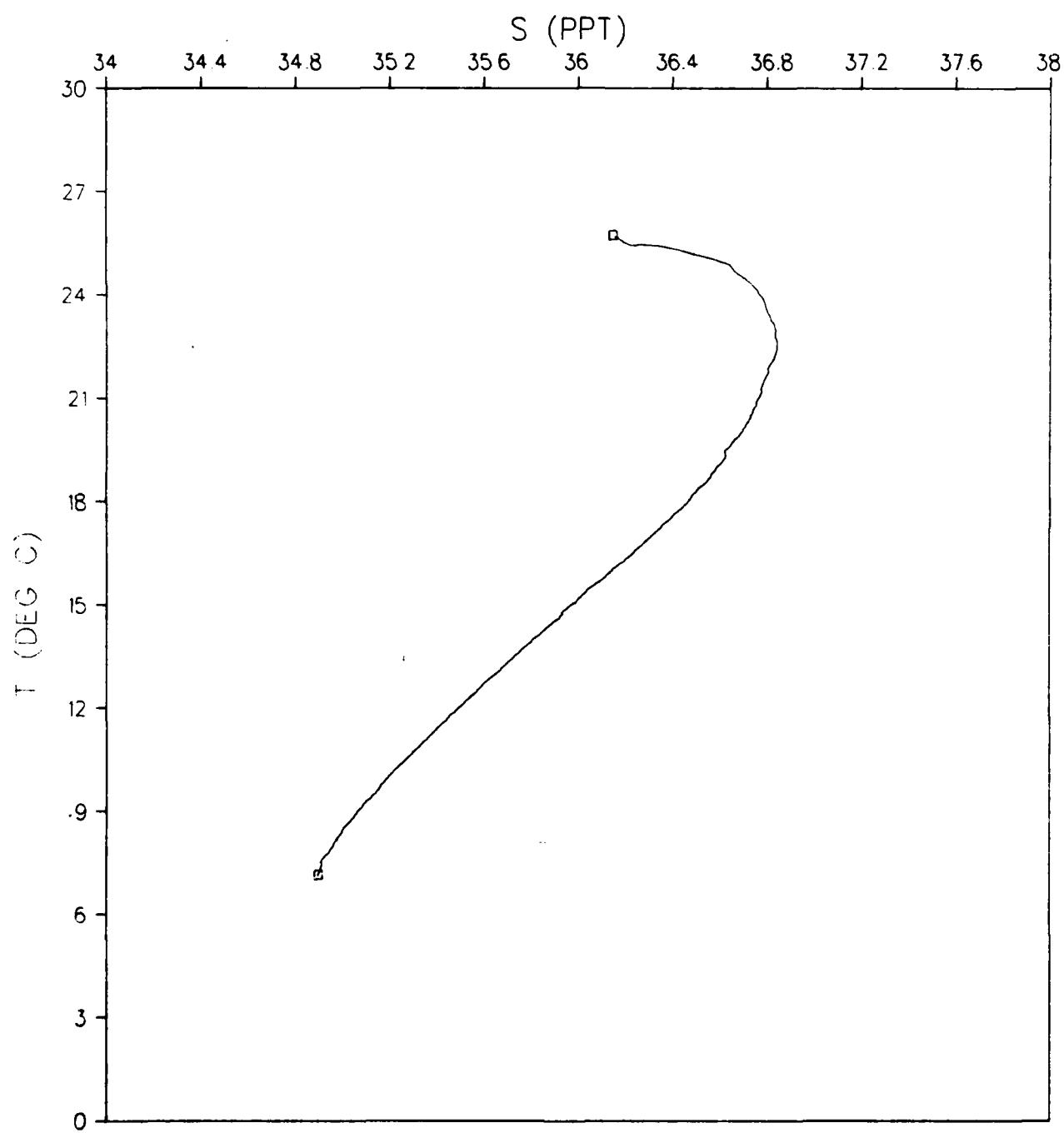


Figure 354.

ATOM 79 DEPLOYMENT
STATION 100020

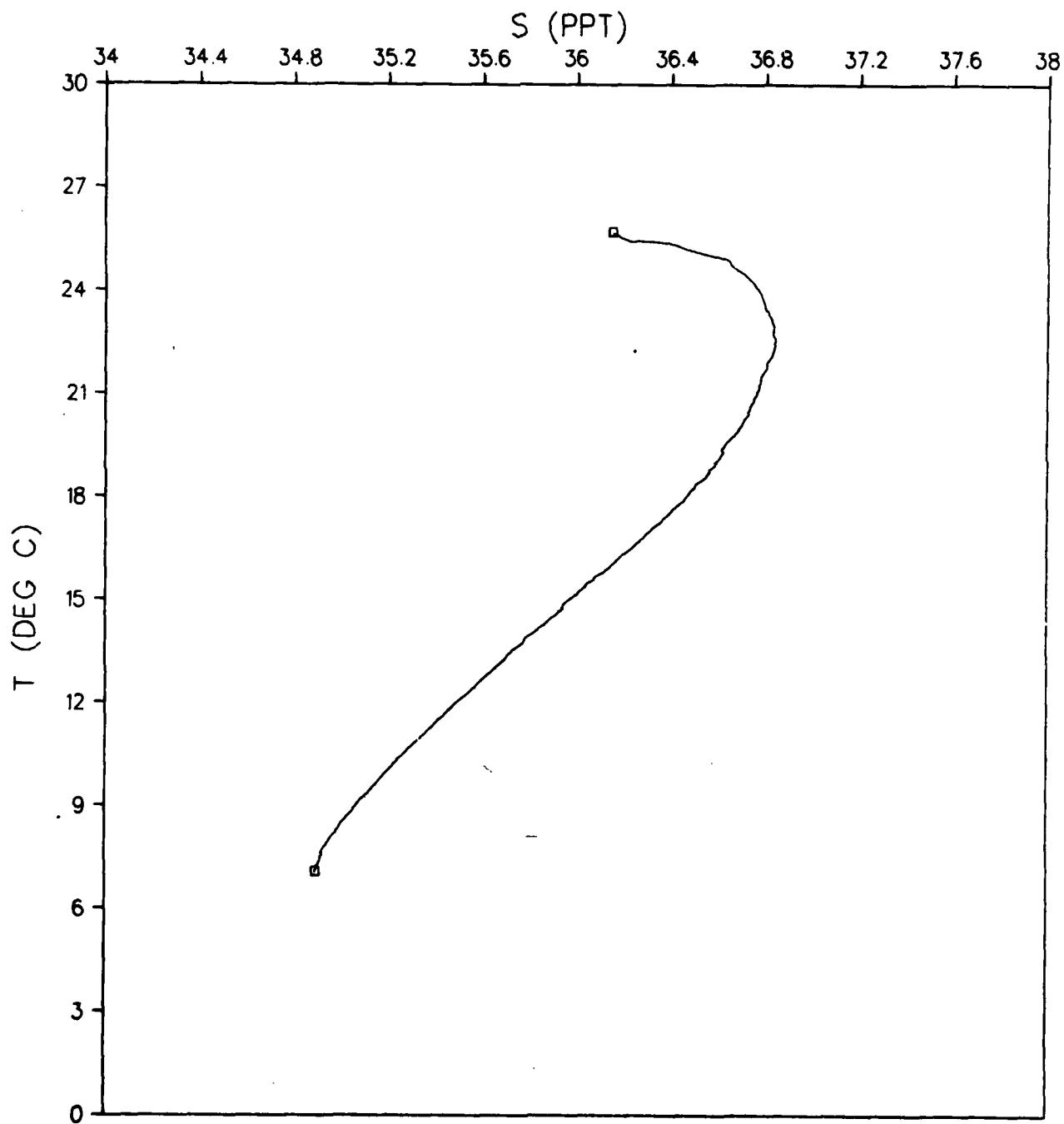


Figure 355.

ATOM 79 DEPLOYMENT
STATION 100021

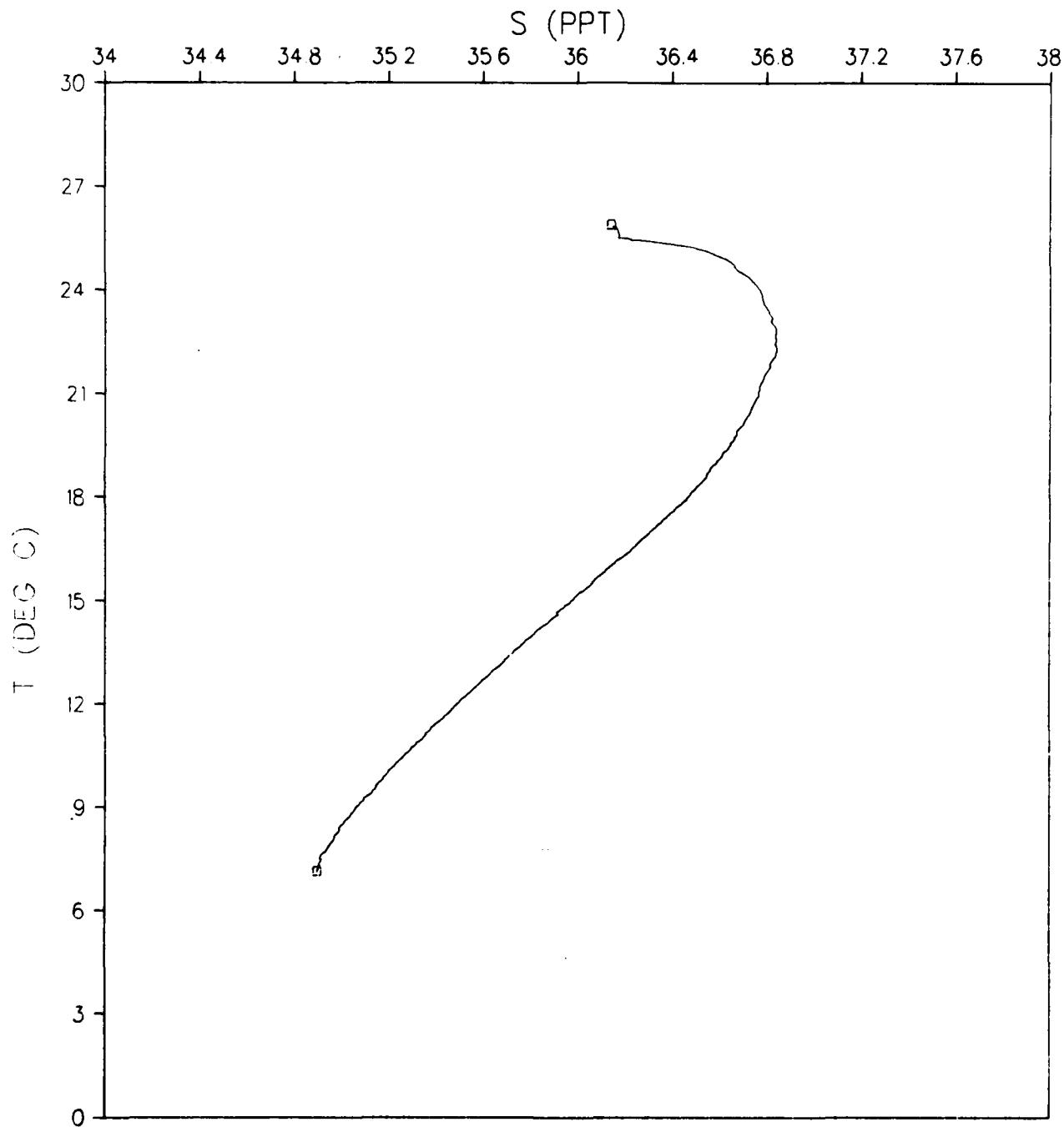


Figure 356.

ATOM 79 DEPLOYMENT
STATION 100022

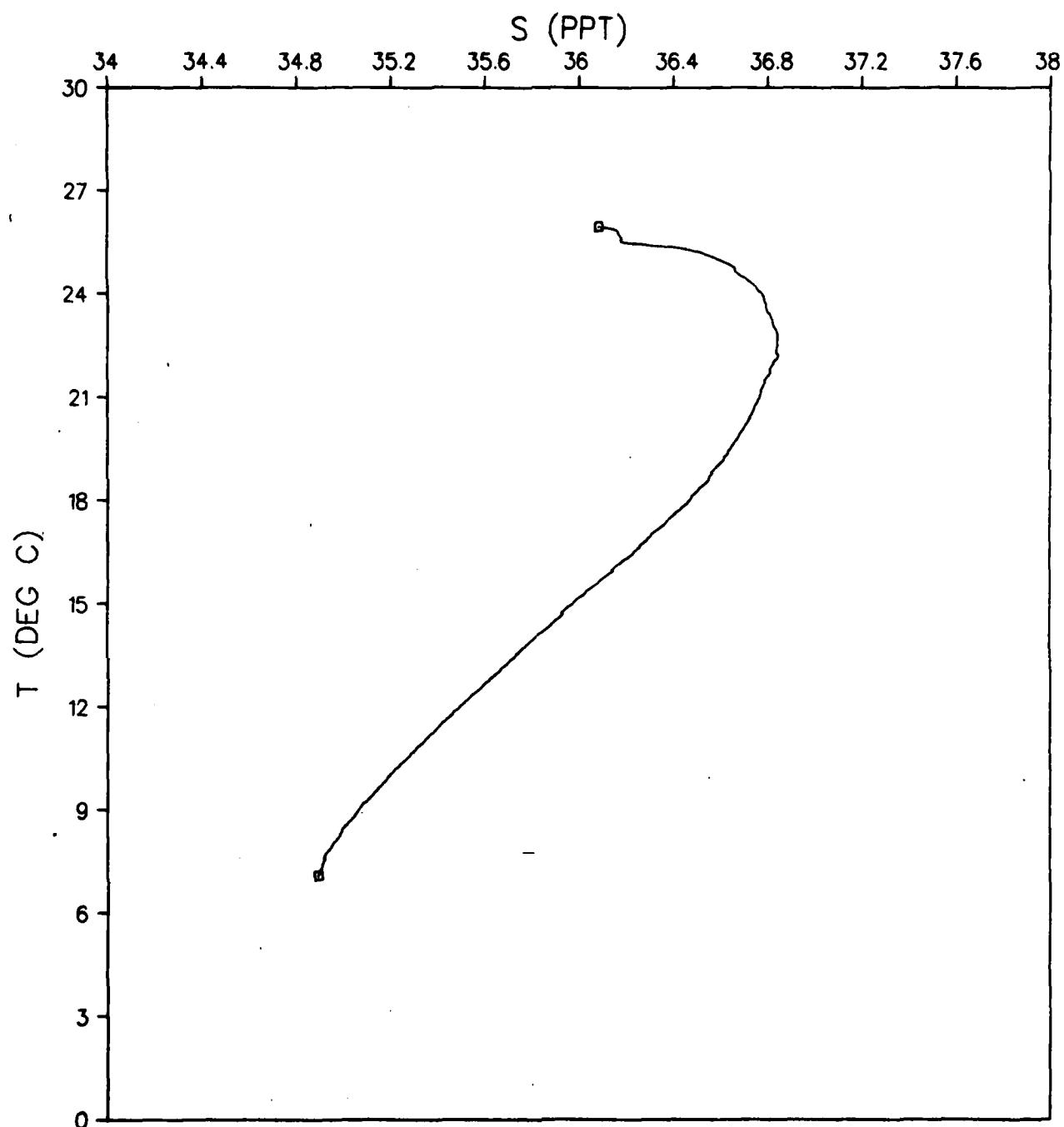


Figure 357.

ATOM 79 DEPLOYMENT
STATION 100023

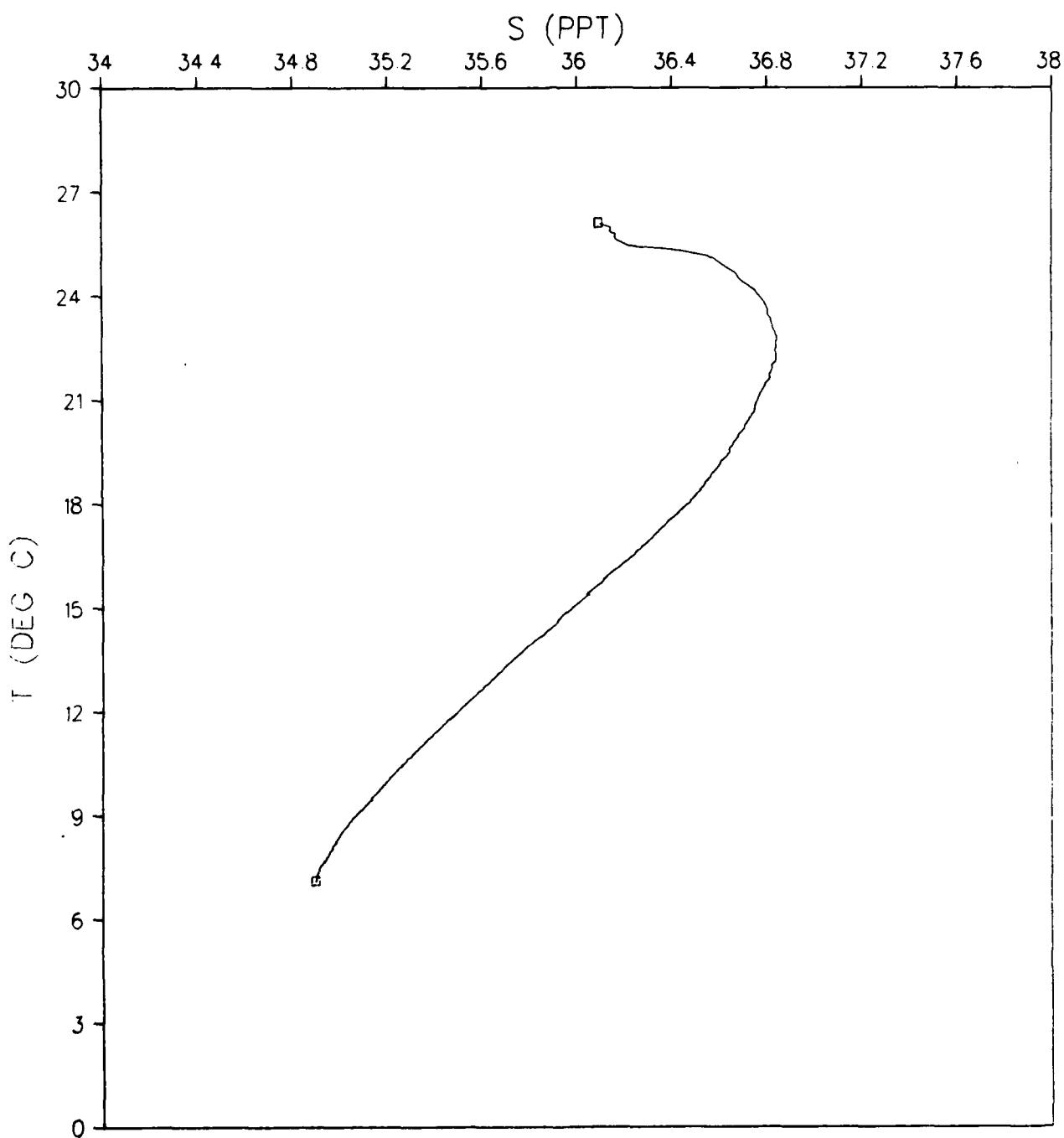


Figure 358.

ATOM 79 DEPLOYMENT
STATION 100024

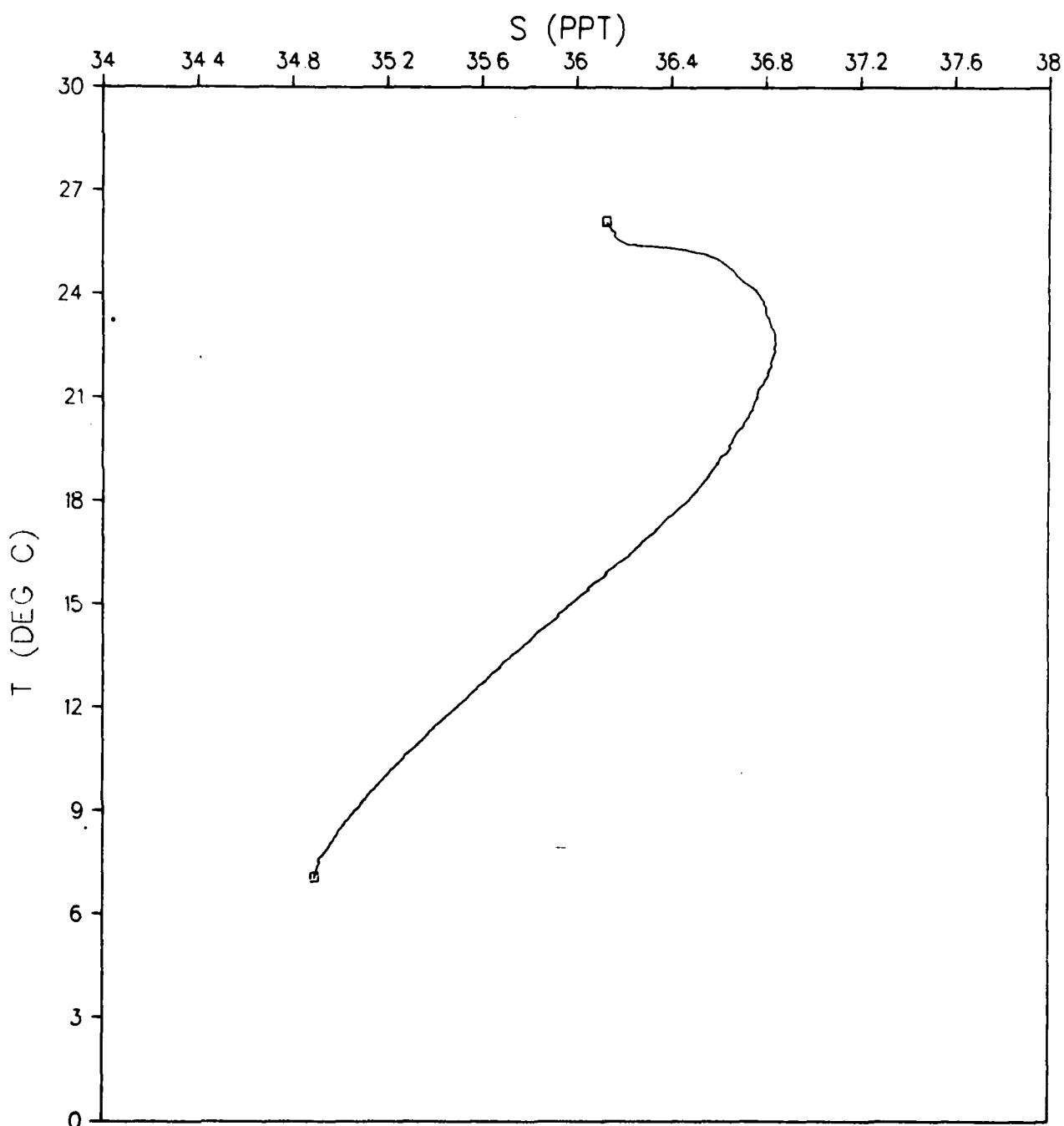


Figure 359.

ATOM 79 DEPLOYMENT
STATION 100025

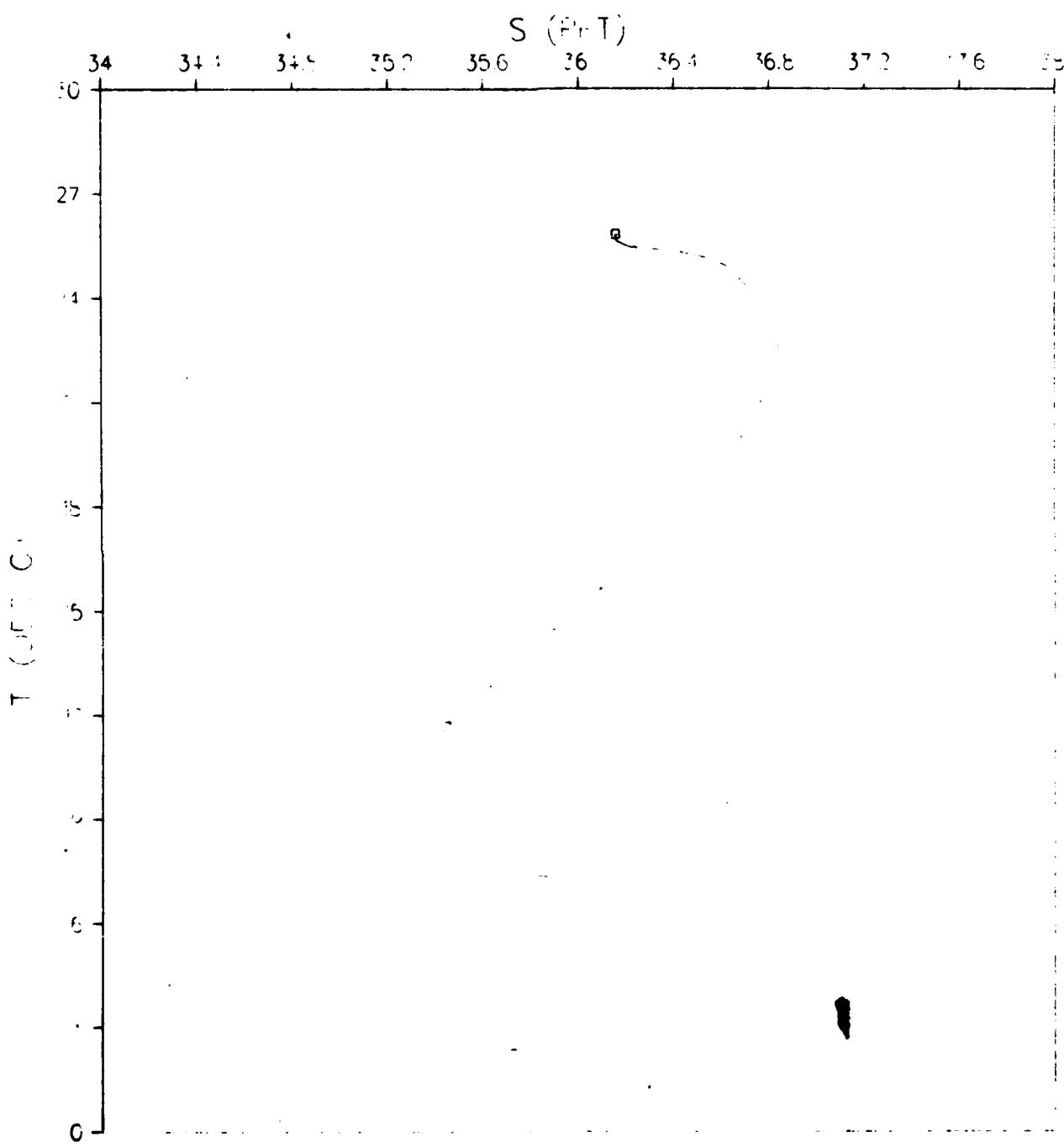


Figure 360.

ATOM 79 DEPLOYMENT
STATION 100026

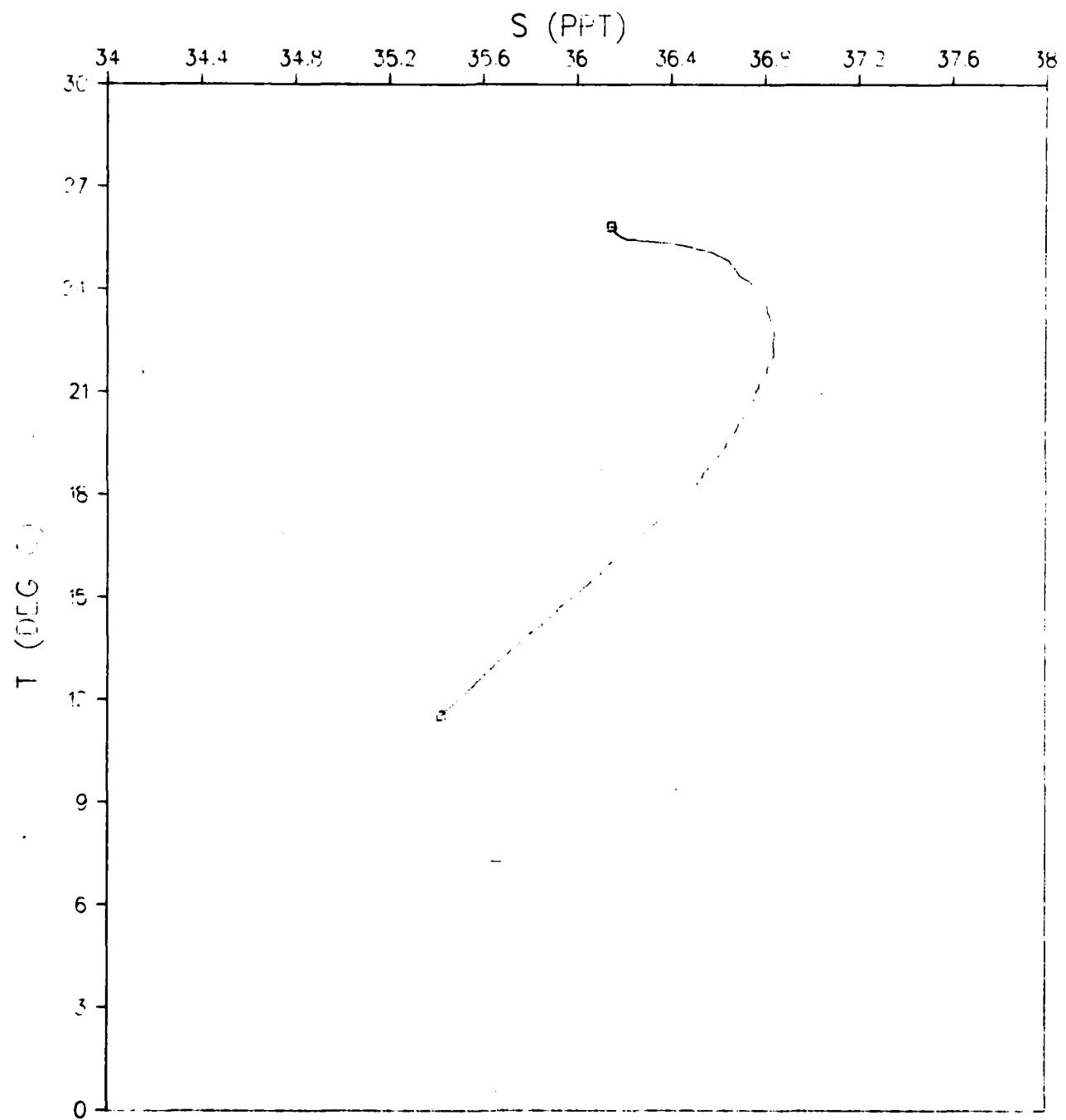


Figure 361.

ATOM 79 DEPLOYMENT
STATION 10027

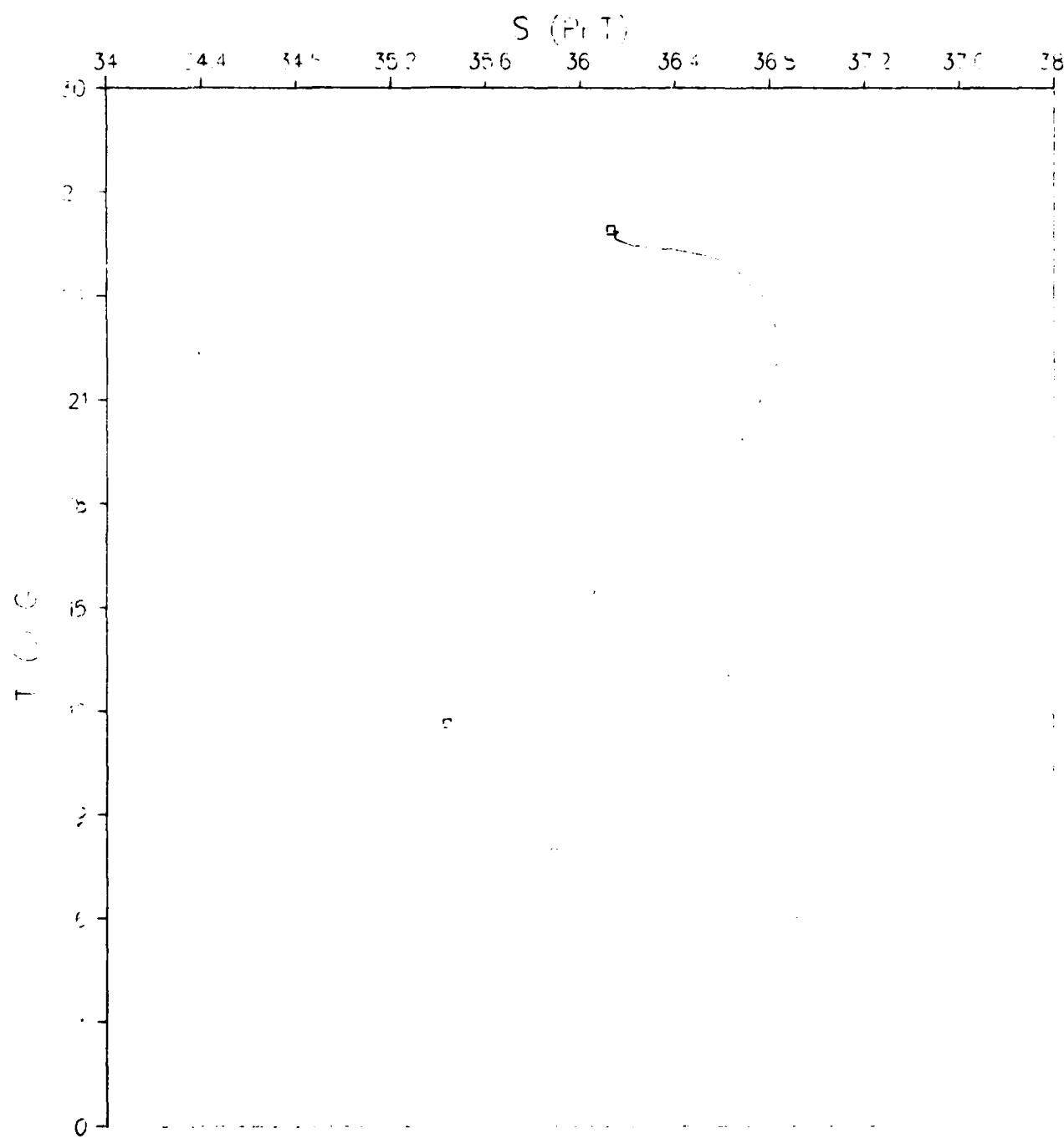
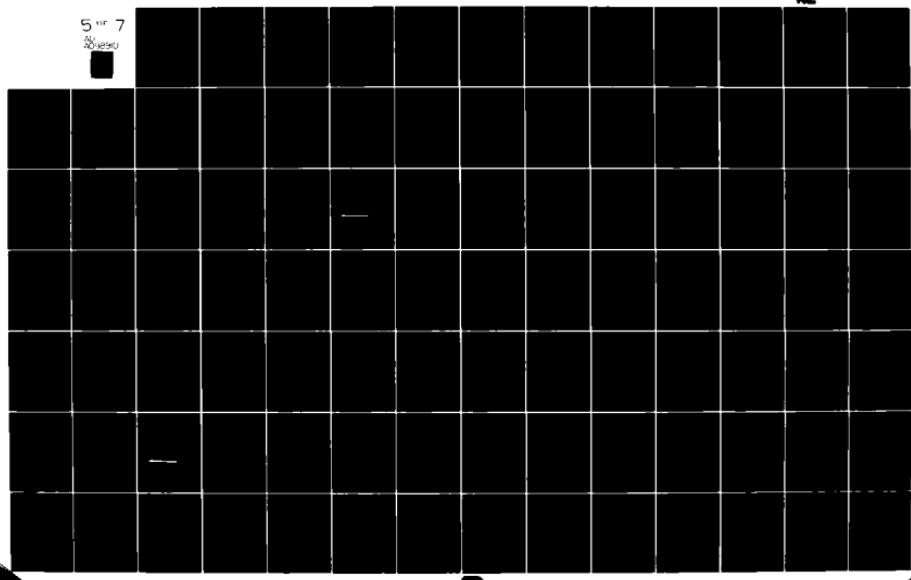
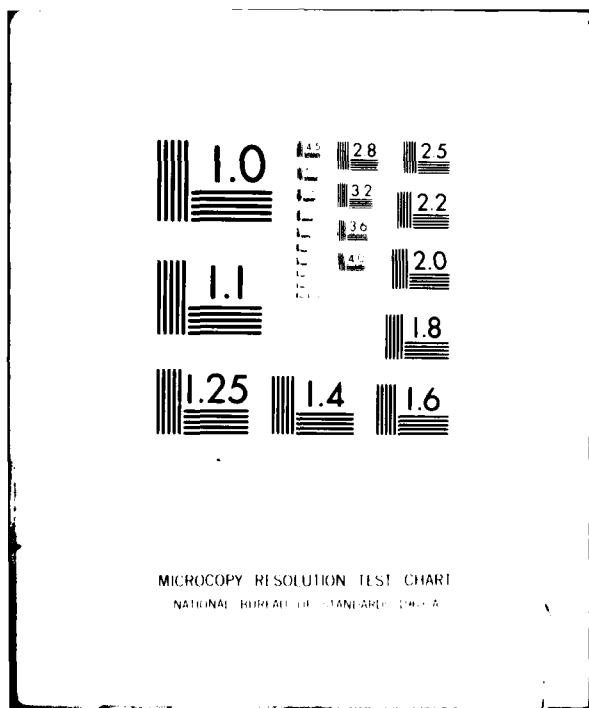


Figure 362.

AD-A096 910 NAVAL OCEAN RESEARCH AND DEVELOPMENT ACTIVITY NSTL S--ETC P/B 8/3
A COMPREHENSIVE GRAPHICAL REPRESENTATION OF DATA OBTAINED IN TH--ETC
OCT 88 K D SAUNDERS, A W GREEN, M T BERGIN
UNCLASSIFIED NORDA-TN-88 NL

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ATOM 79 DEPLOYMENT
STATION 100028

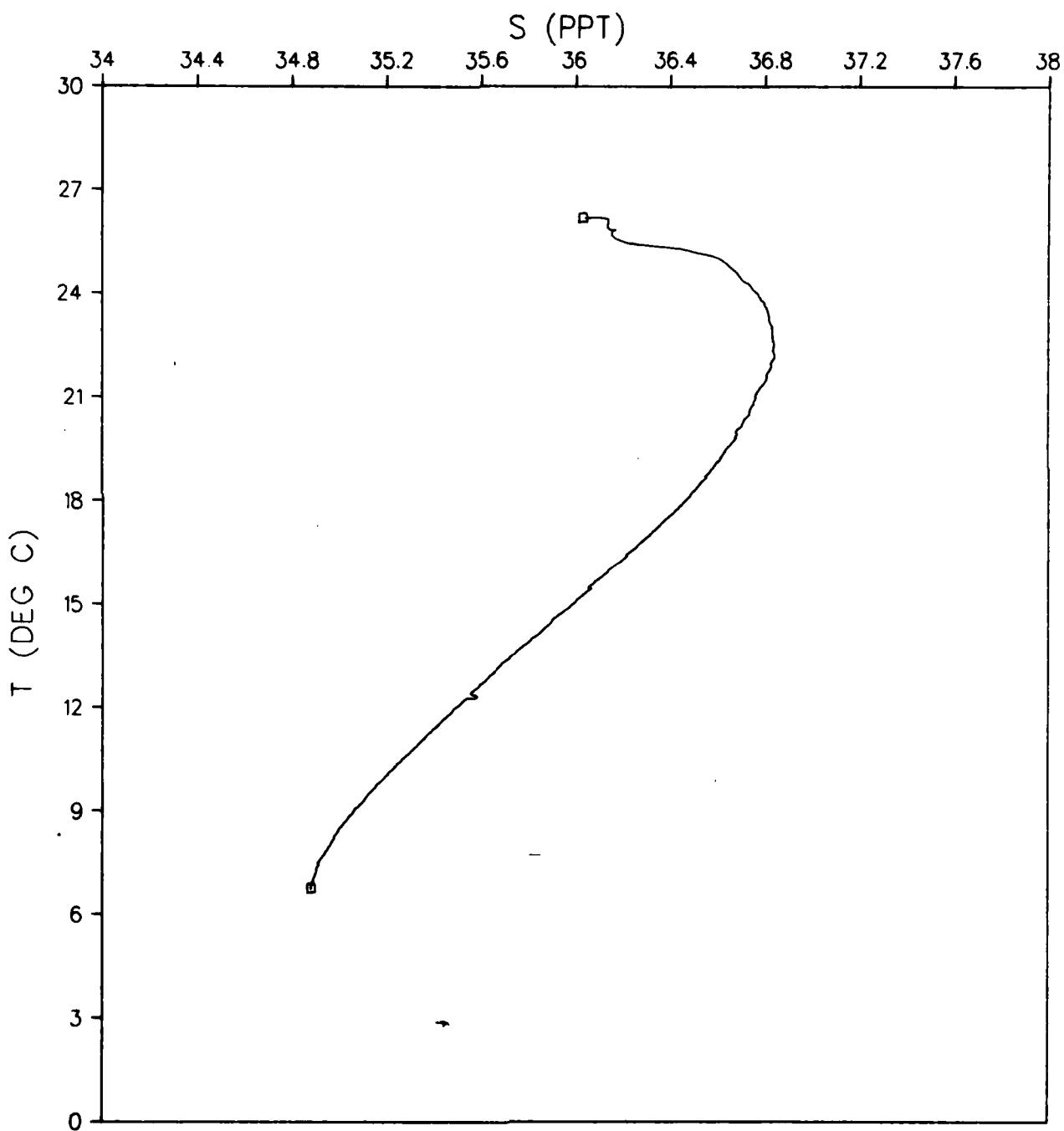


Figure 363.

ATOM 79 DEPLOYMENT
STATION 10002.1

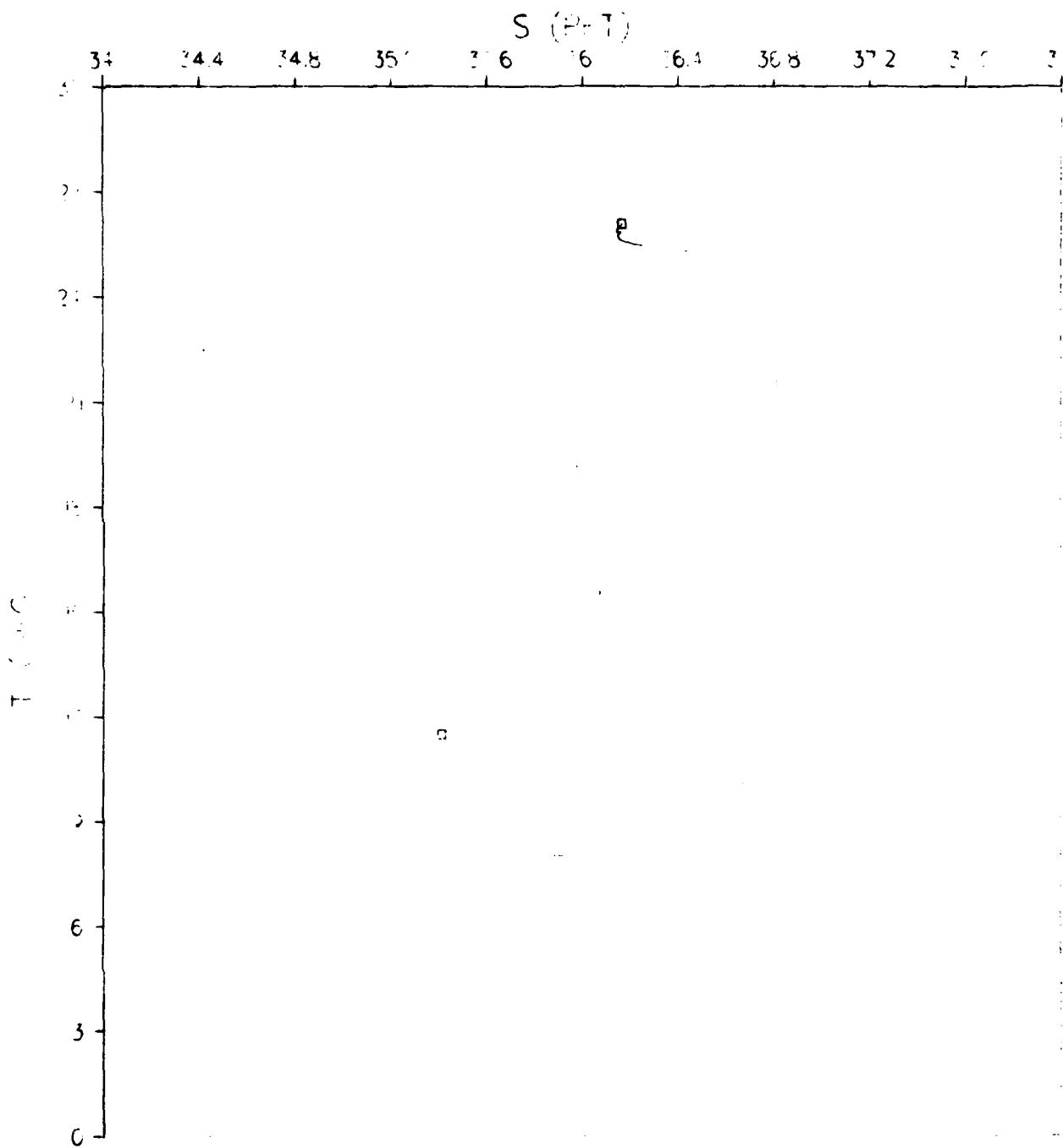


Figure 364.

ATOM 79 DEPLOYMENT
STATION 100030

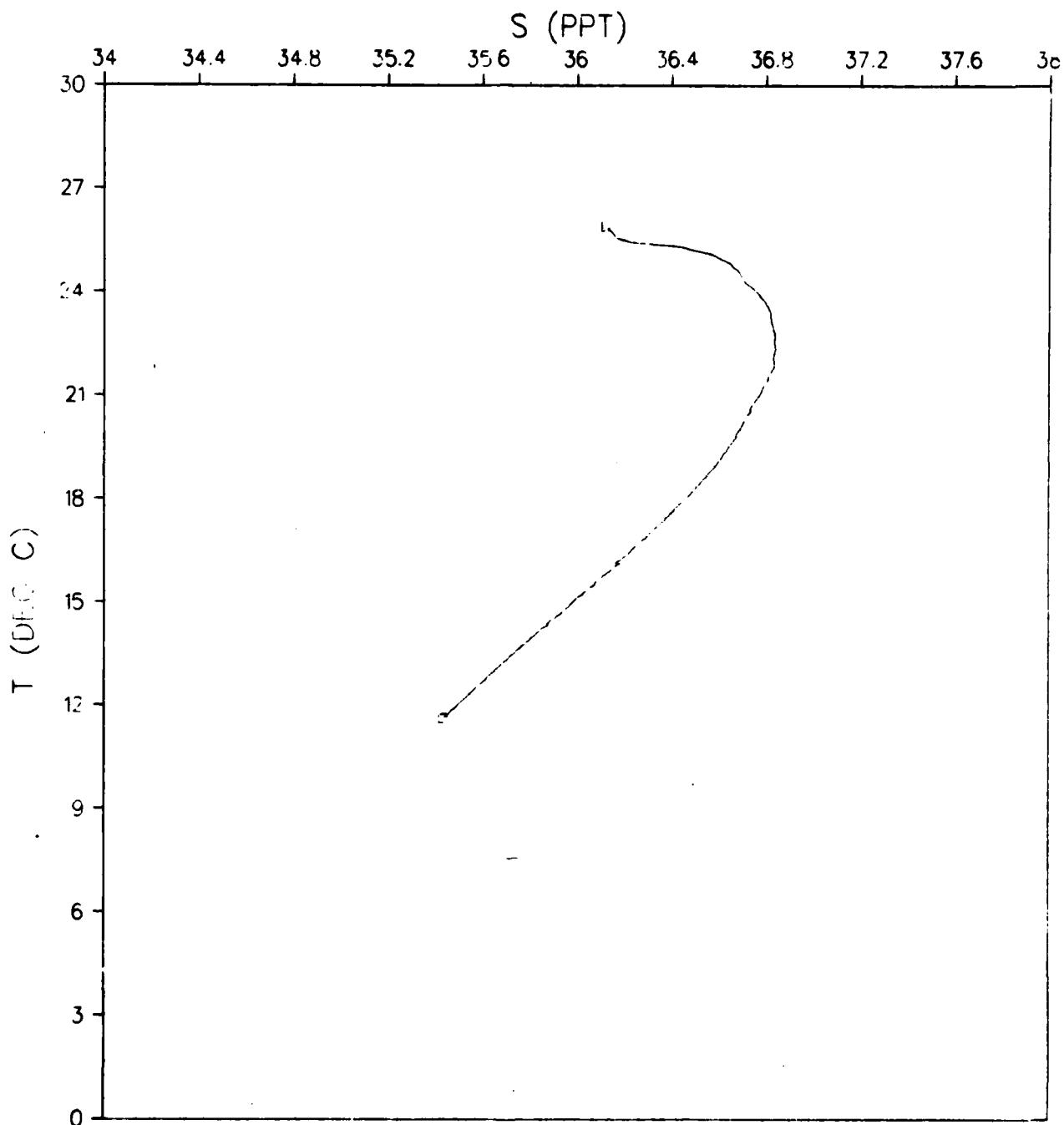


Figure 365.

ATCM 79 DEPLOYMENT
STATION 100000

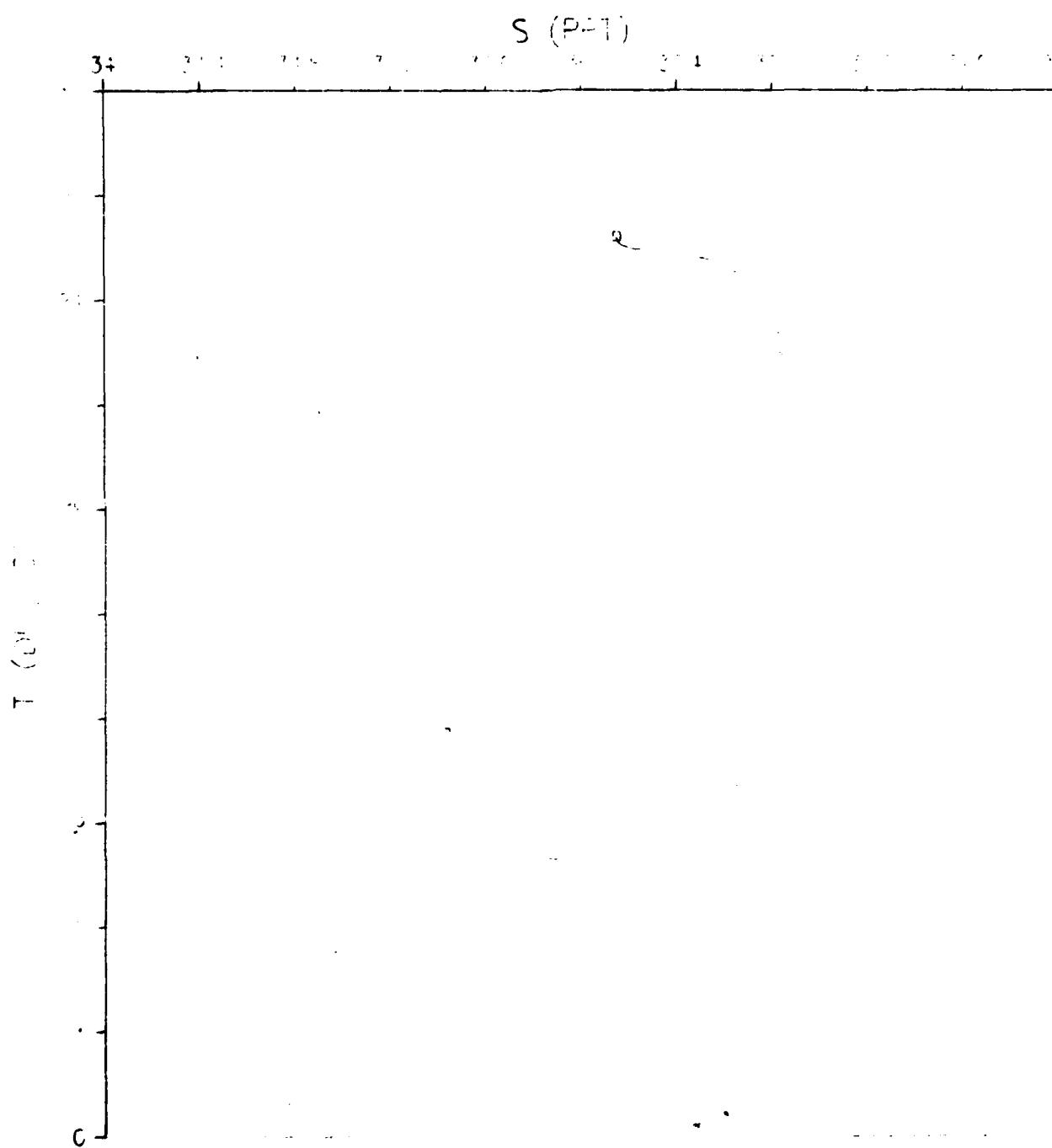


Figure 366.

ATOM 79 DEPLOYMENT
STATION 100032

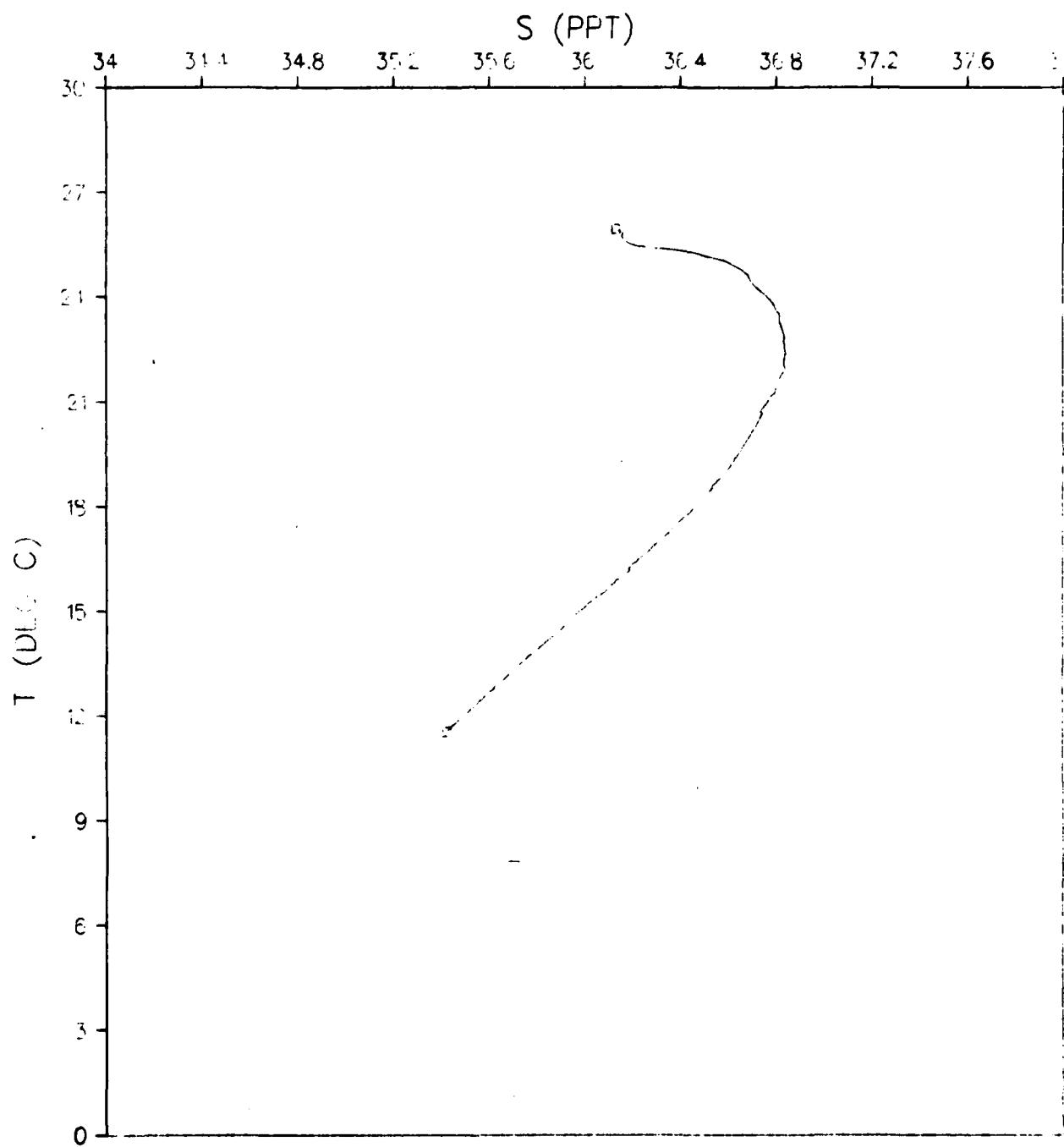


Figure 367.

ATCM 70 DEPLOYMENT
STATION 100.73

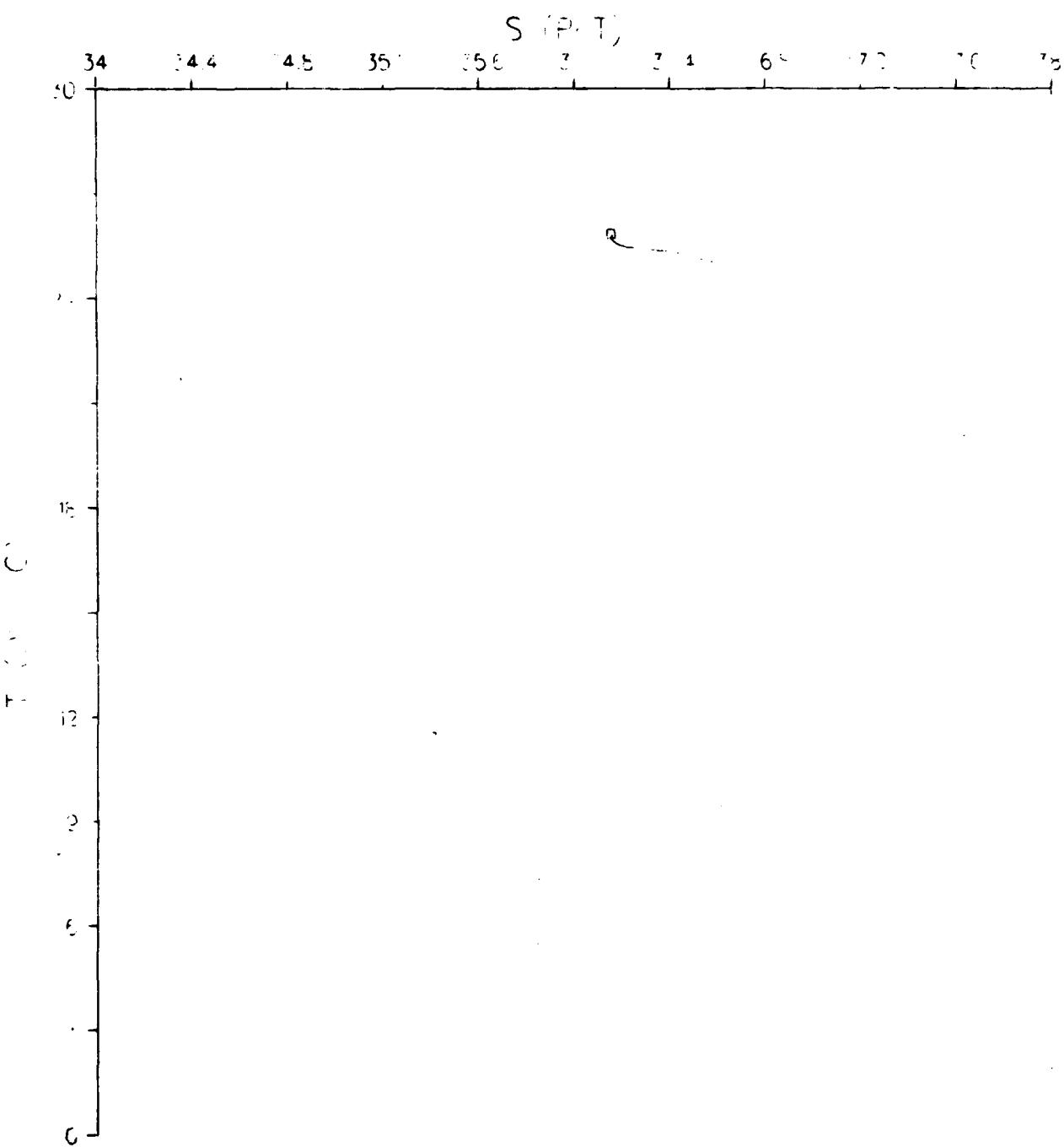


Figure 368.

ATOM 79 DEPLOYMENT
STATION 100034

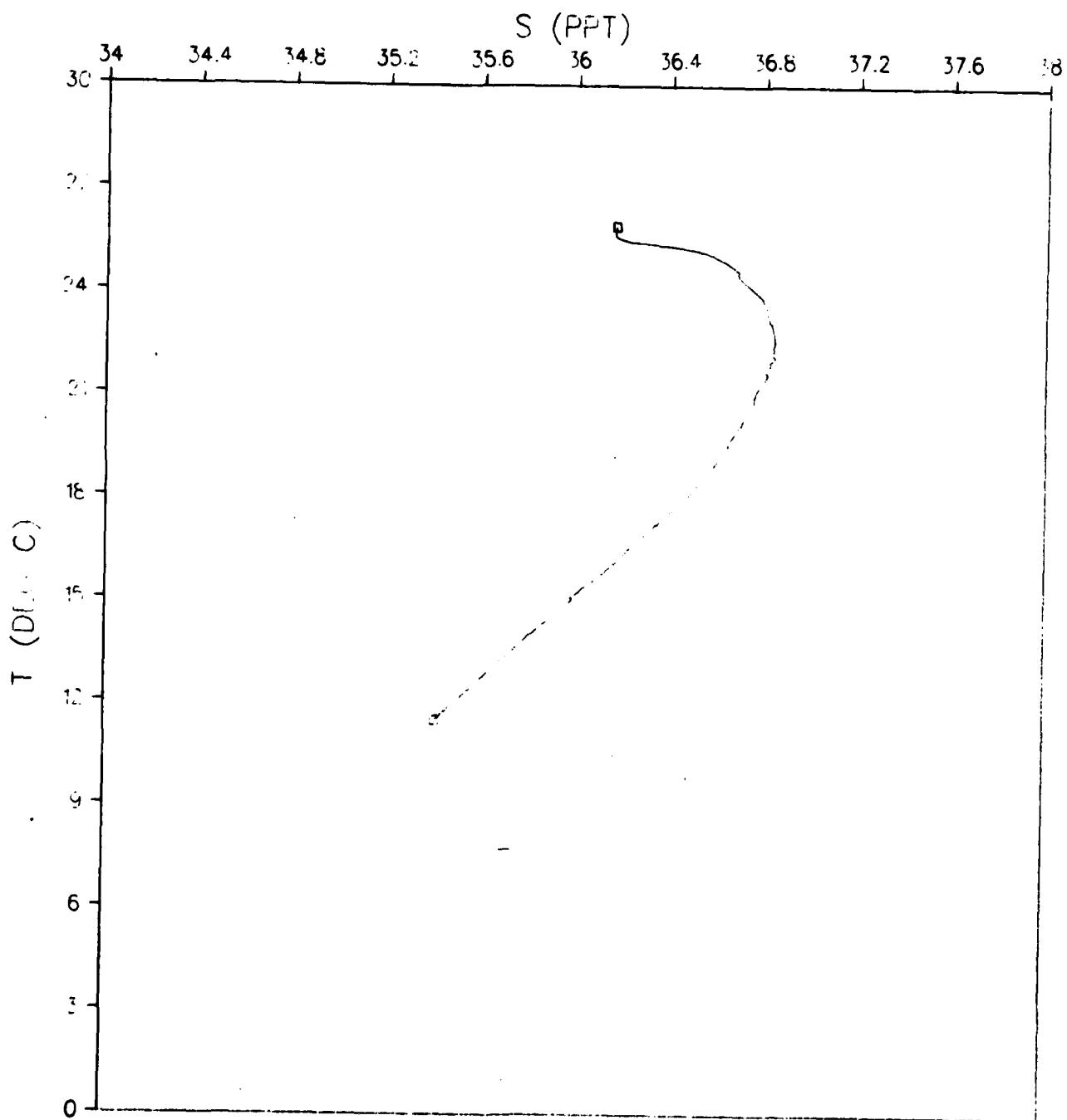


Figure 369.

4.4 CTD Data - Recovery Cruise

4.4.1 Temperature and Salinity vs. Depth (Figures 370-409)

4.4.2 Brunt-Väisälä Frequency and Sigma-t vs. Depth (Figures 410-449)

4.4.3 Temperature vs. Salinity (Figures 450-490)

ATOM 79 RECOVERY
STATION 200001

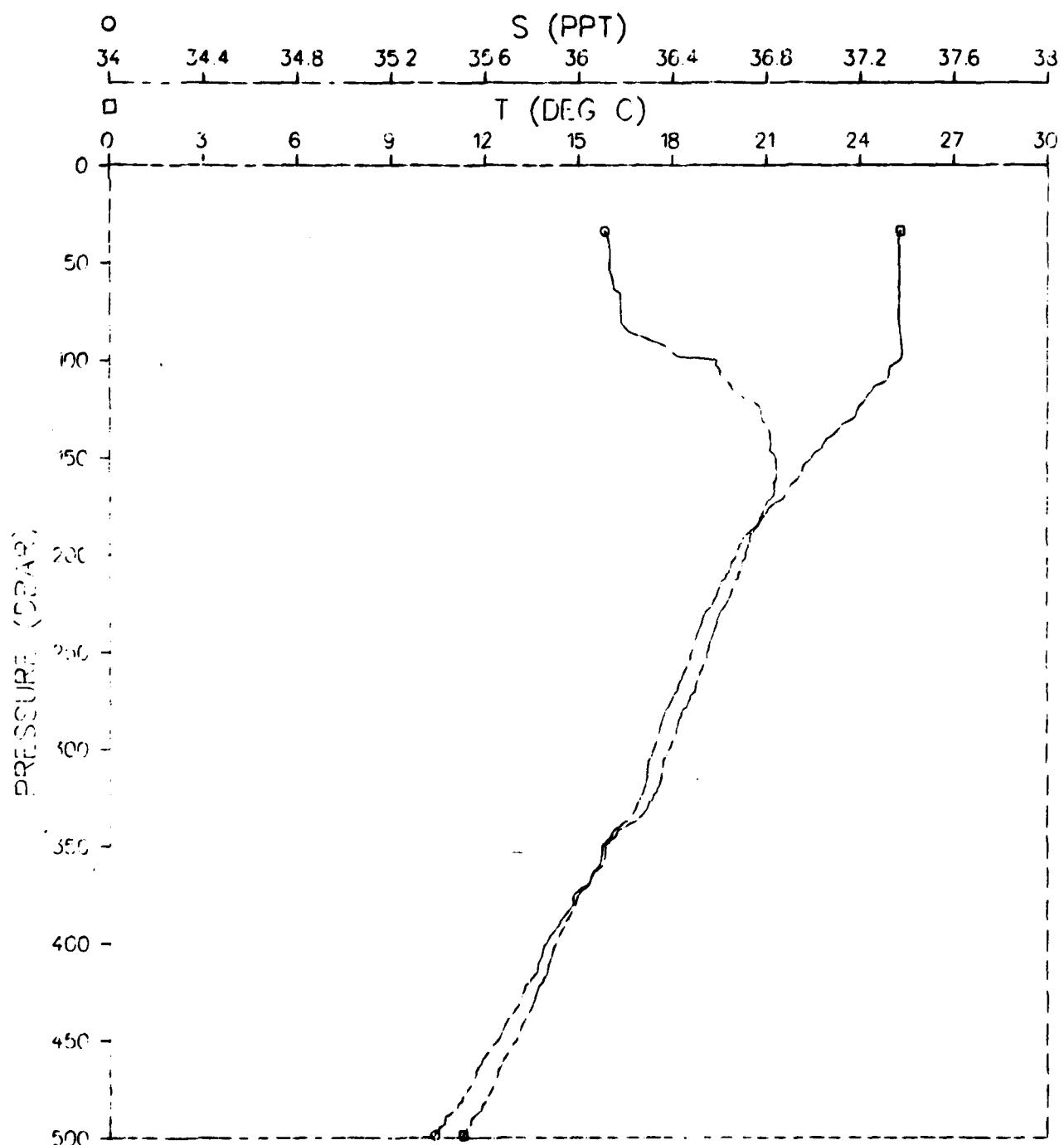


Figure 370,

ATOM 79 RECOVERY
STATION 200002

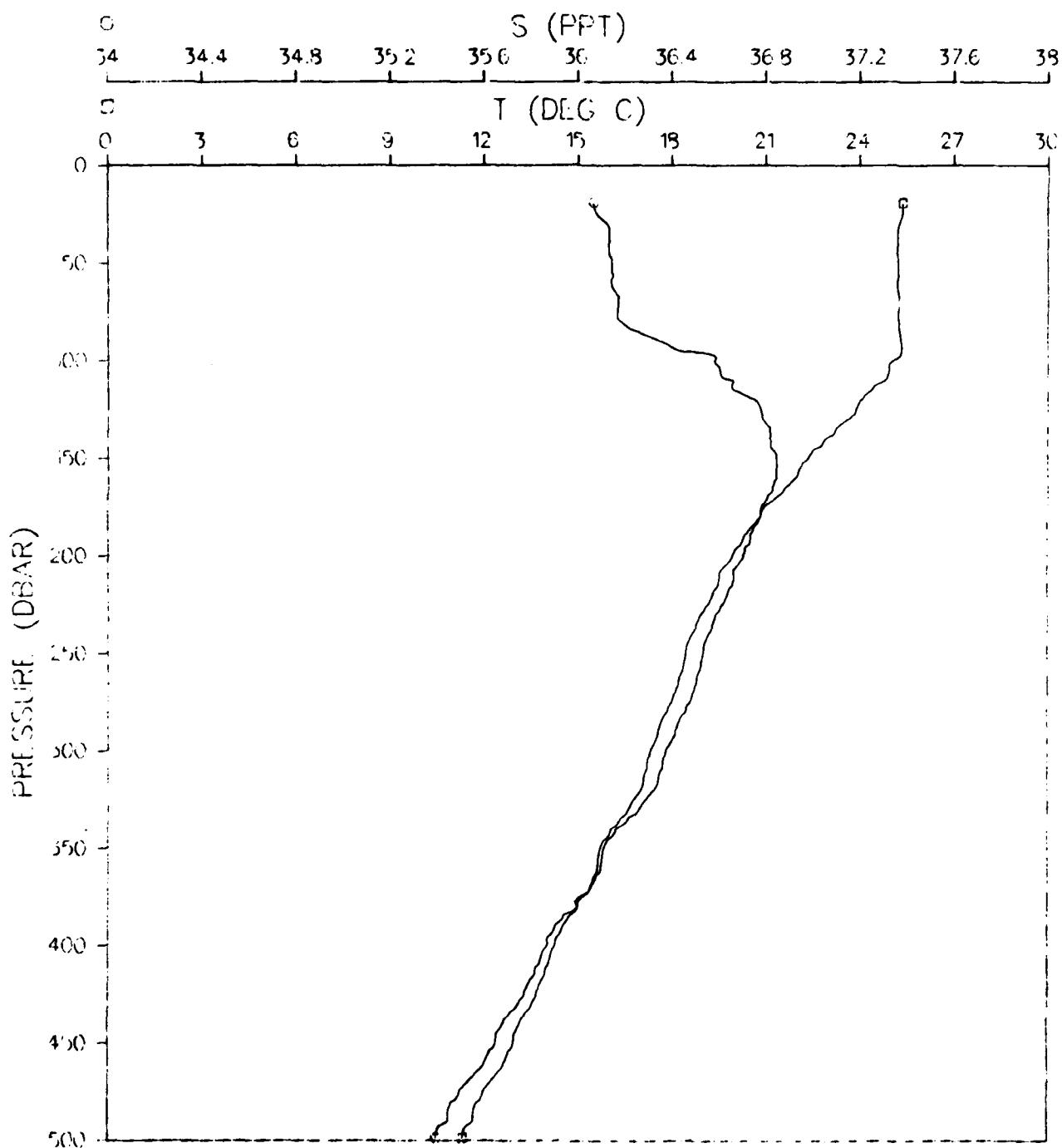


Figure 371.

ATOM 79 RECOVERY
STATION 200003

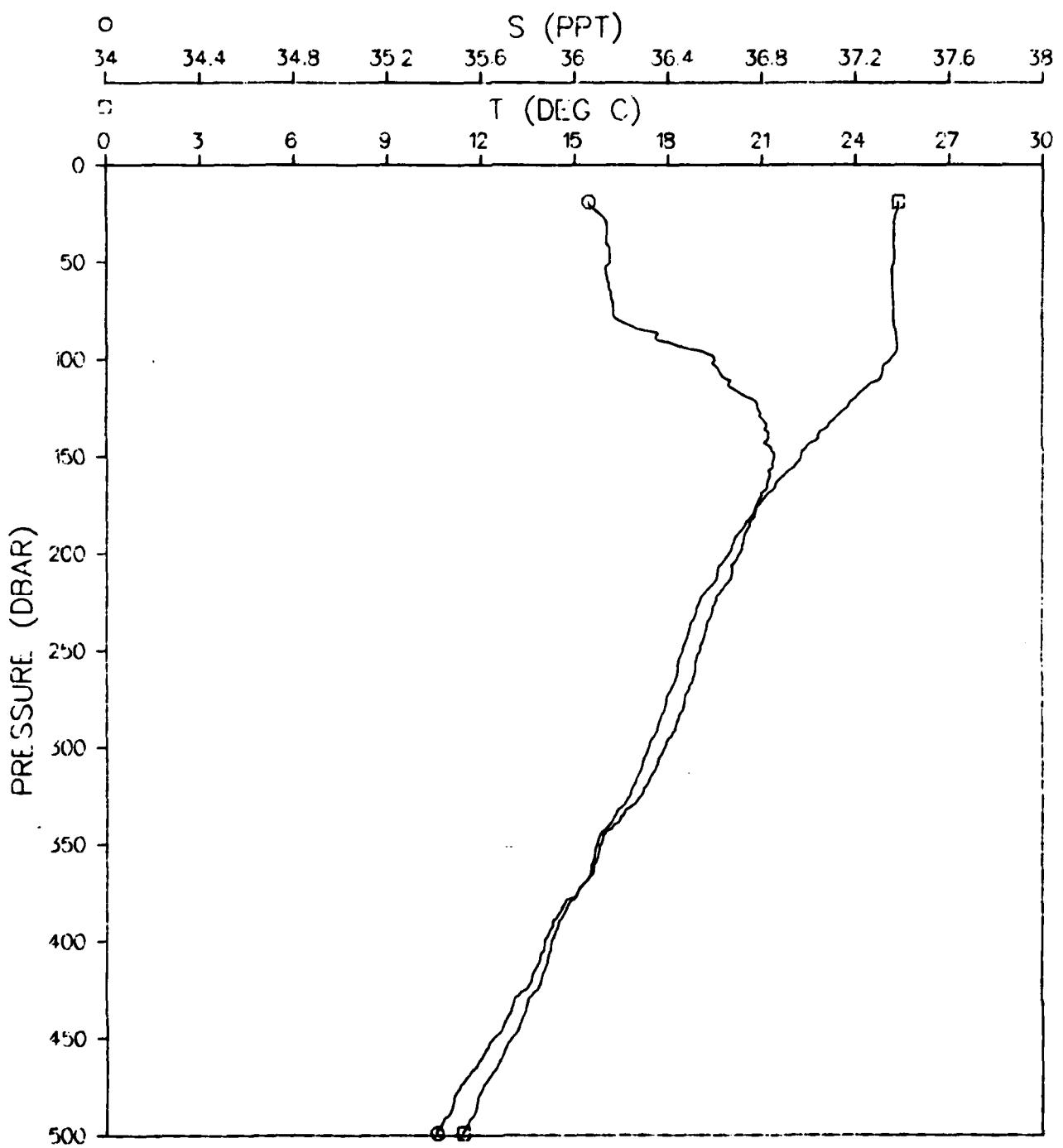


Figure 372.

ATOM 79 RECOVERY
STATION 200004

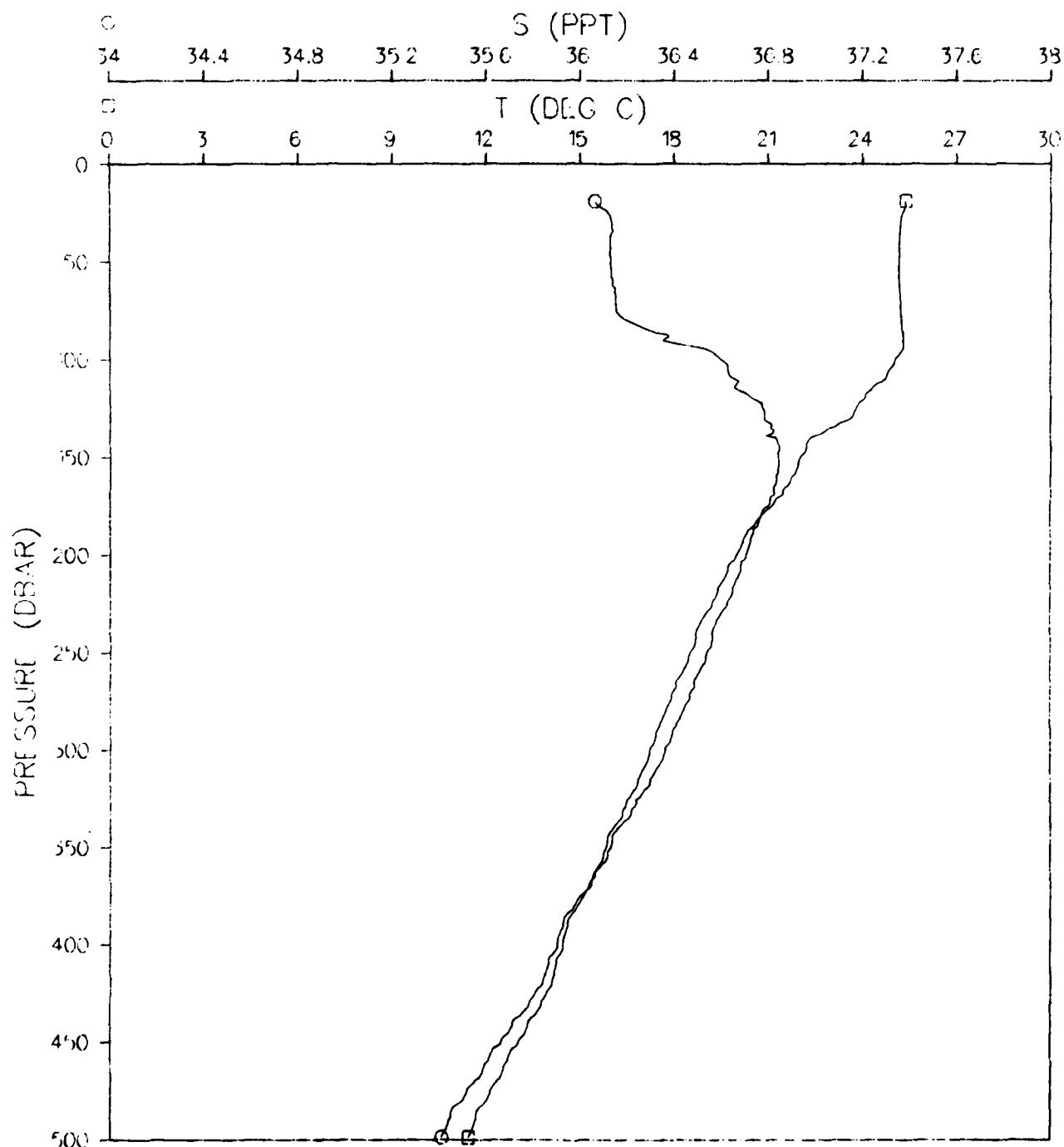


Figure 373.

ATOM 79 RECOVERY
STATION 200005

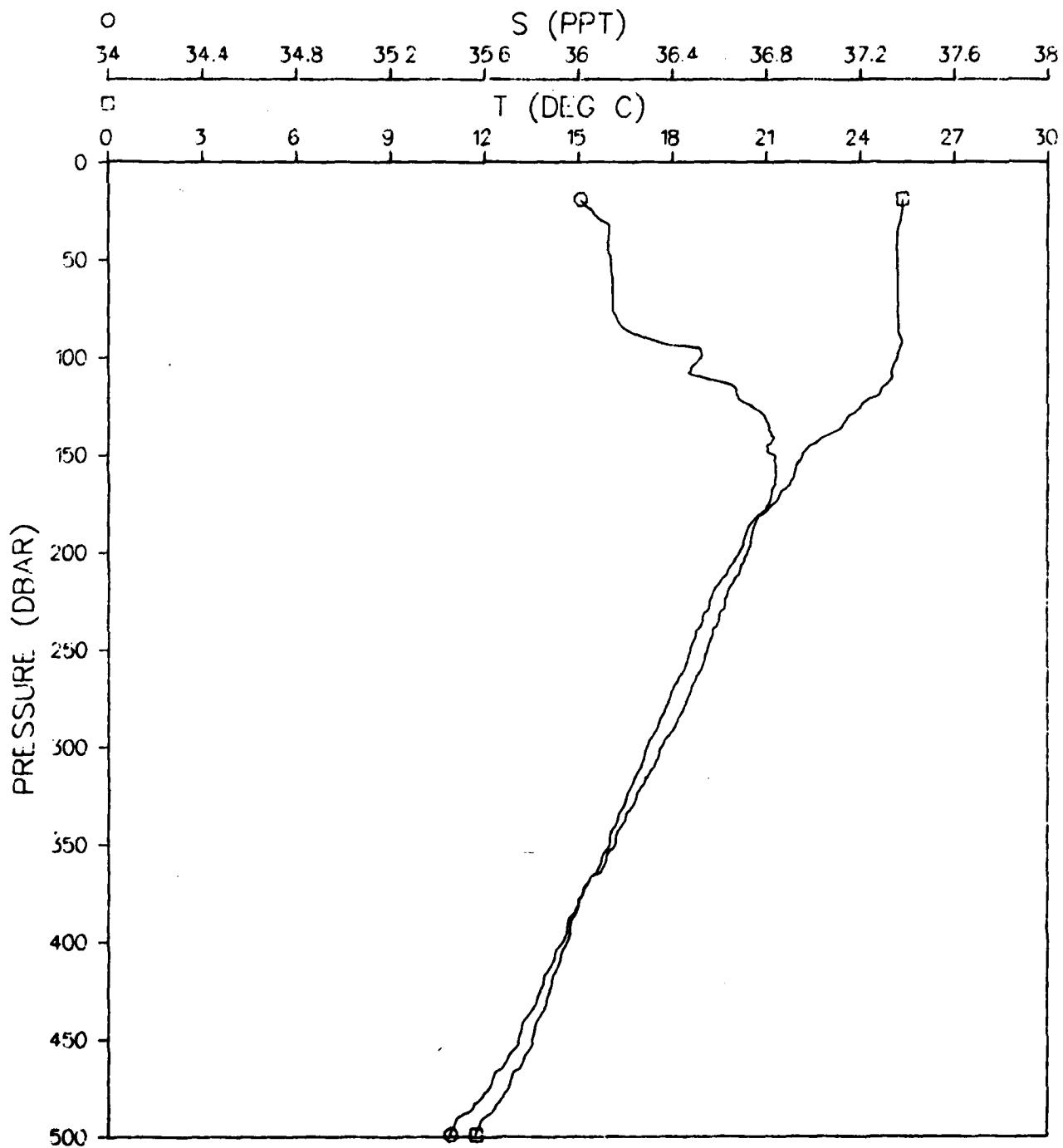


Figure 374.

ATOM 79 RECOVERY
STATION 200006

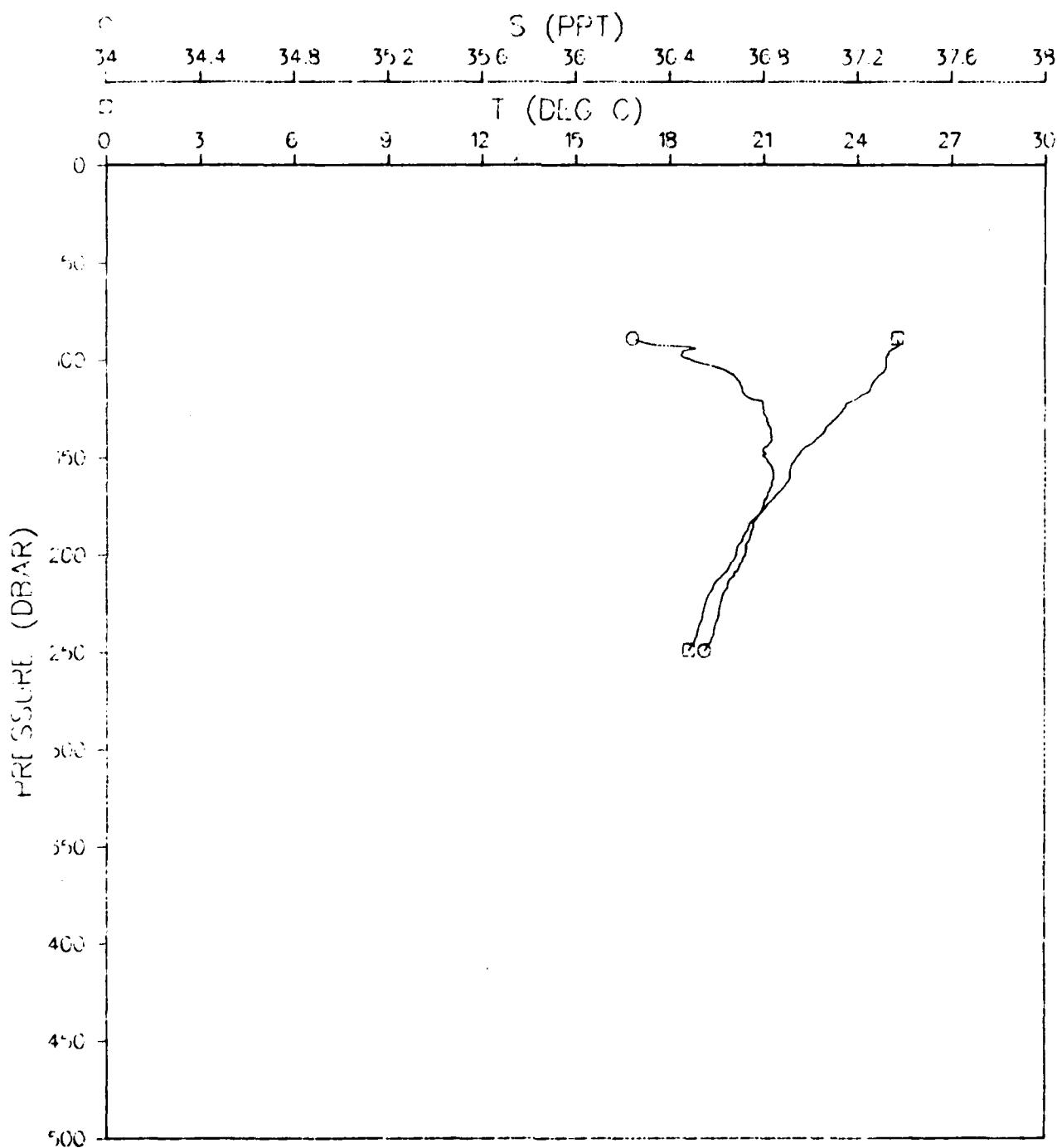


Figure 375.

ATOM 79 RECOVERY
STATION 200007

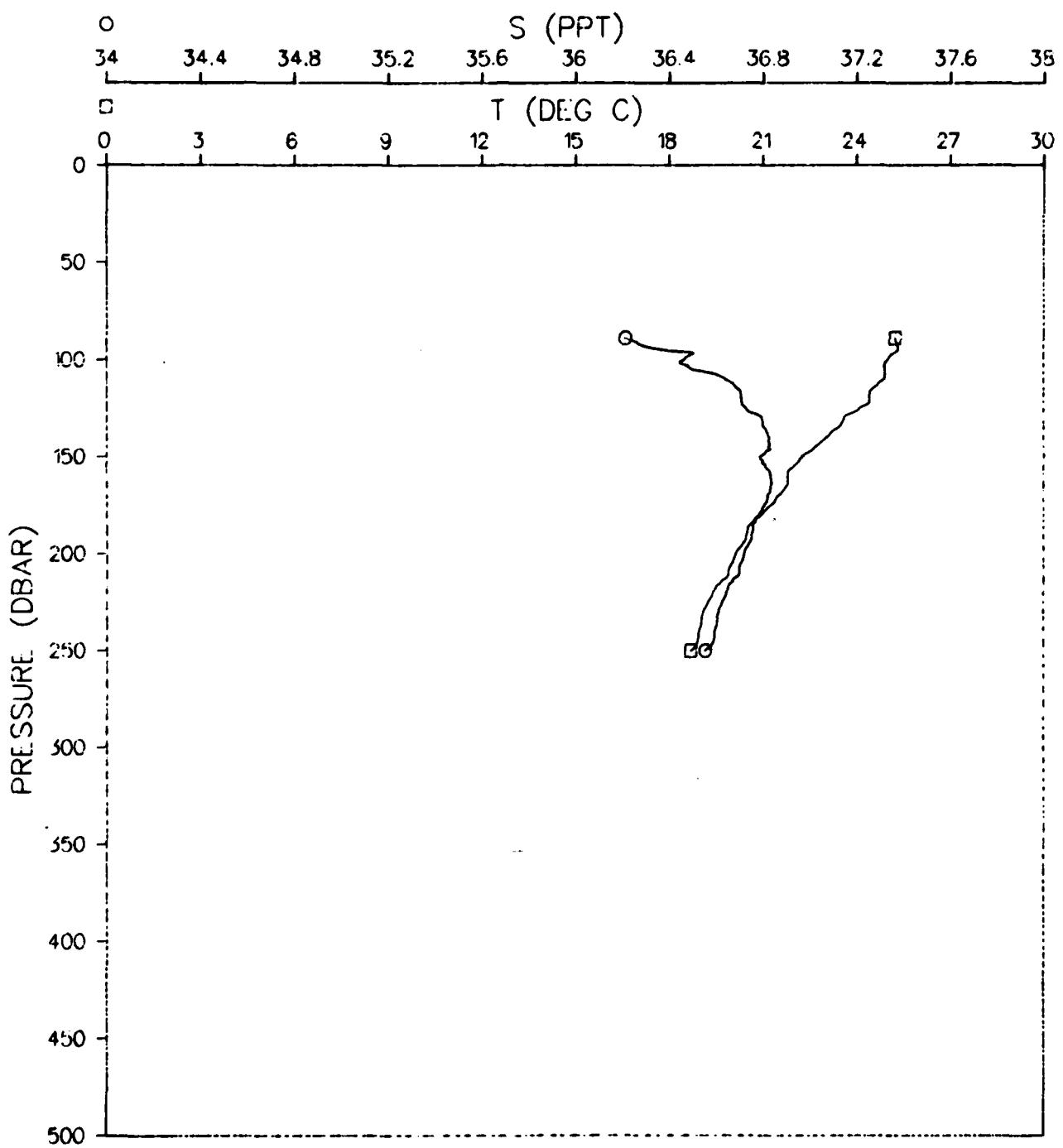


Figure 376.

ATOM 79 RECOVERY
STATION 200008

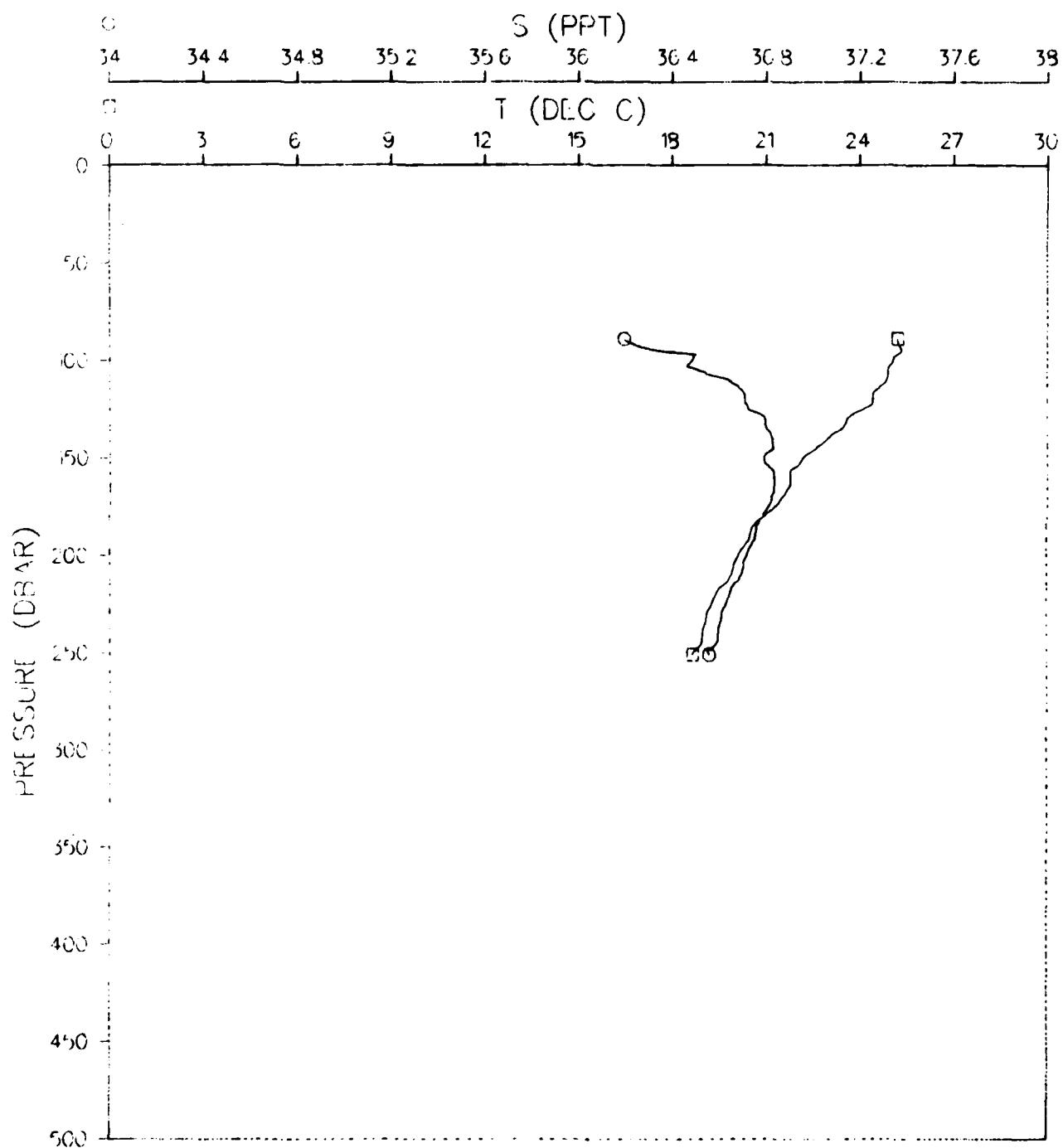


Figure 377.

ATOM 79 RECOVERY
STATION 200009

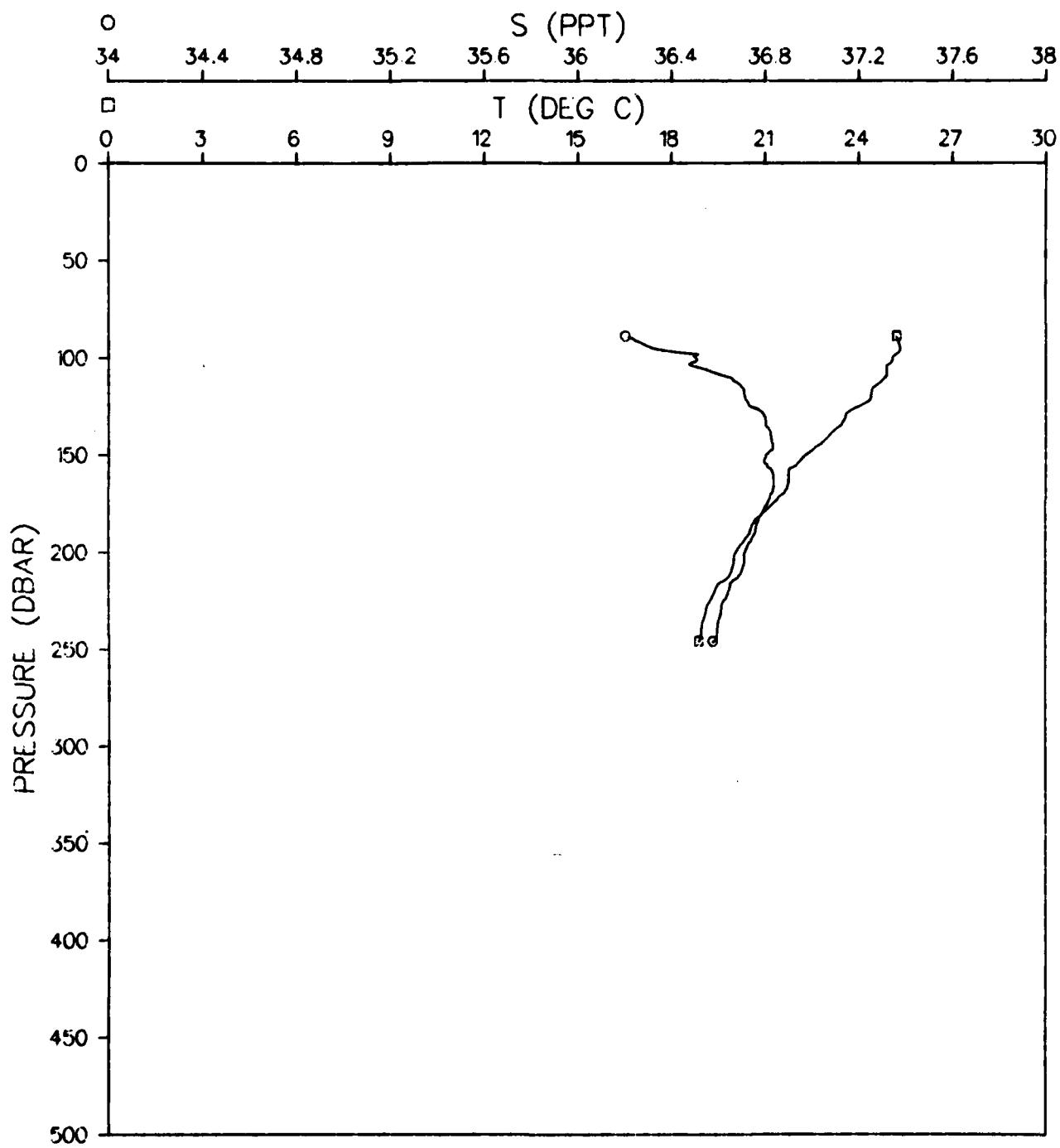


Figure 378.

ATOM 79 RECOVERY
STATION 200010

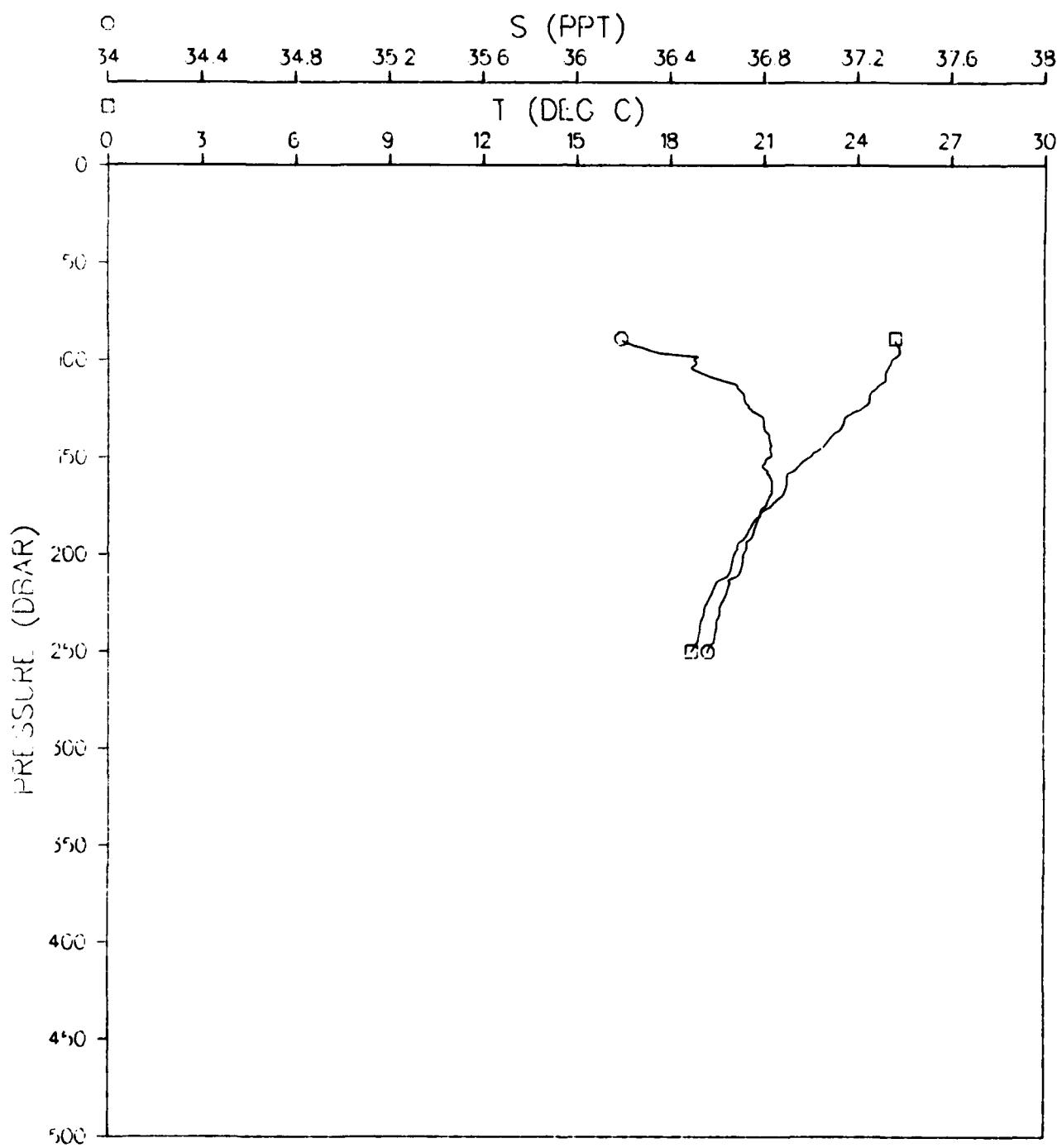


Figure 379.

ATOM 79 RECOVERY
STATION 200011

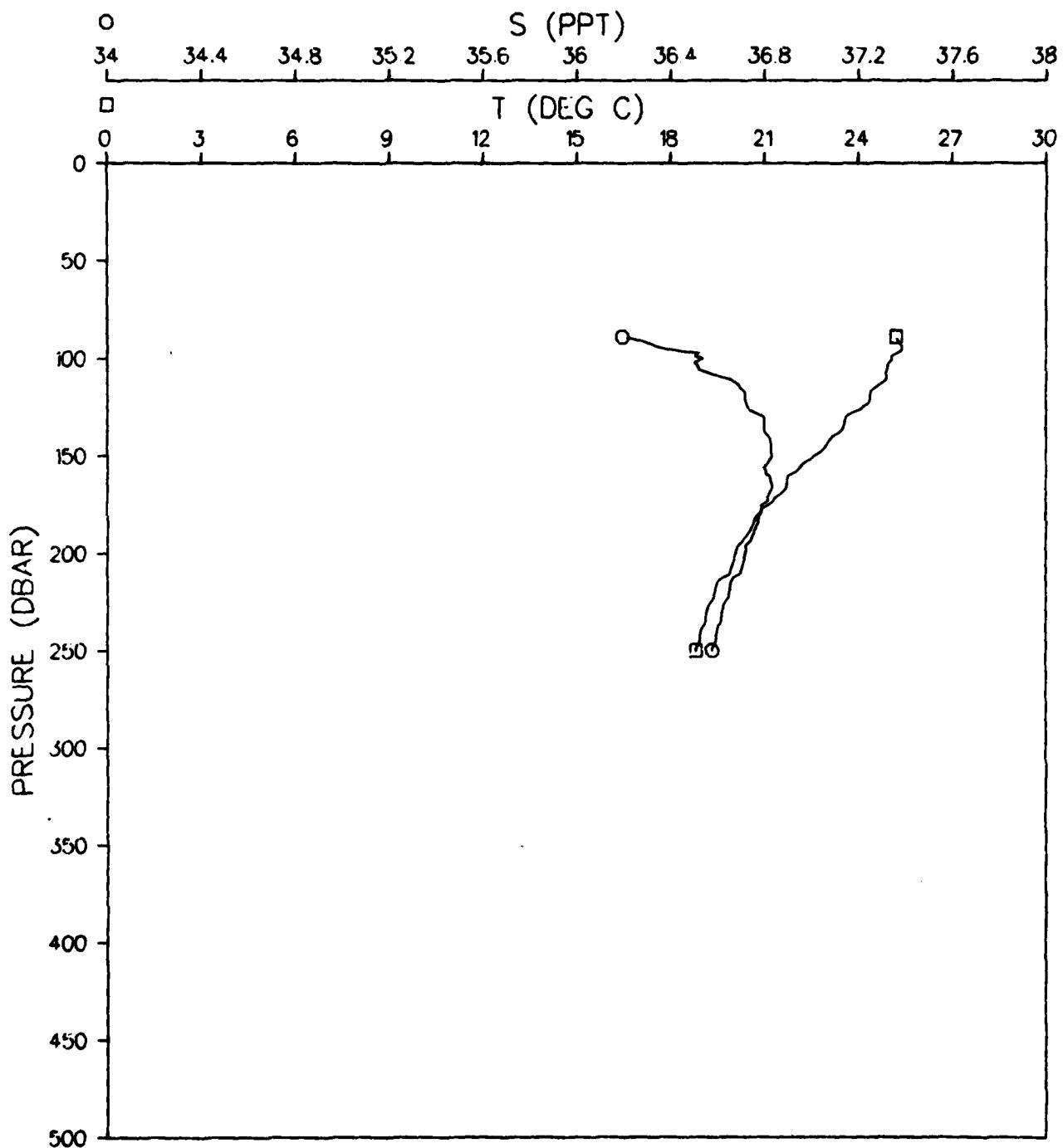


Figure 380.

ATOM 79 RECOVERY
STATION 200012

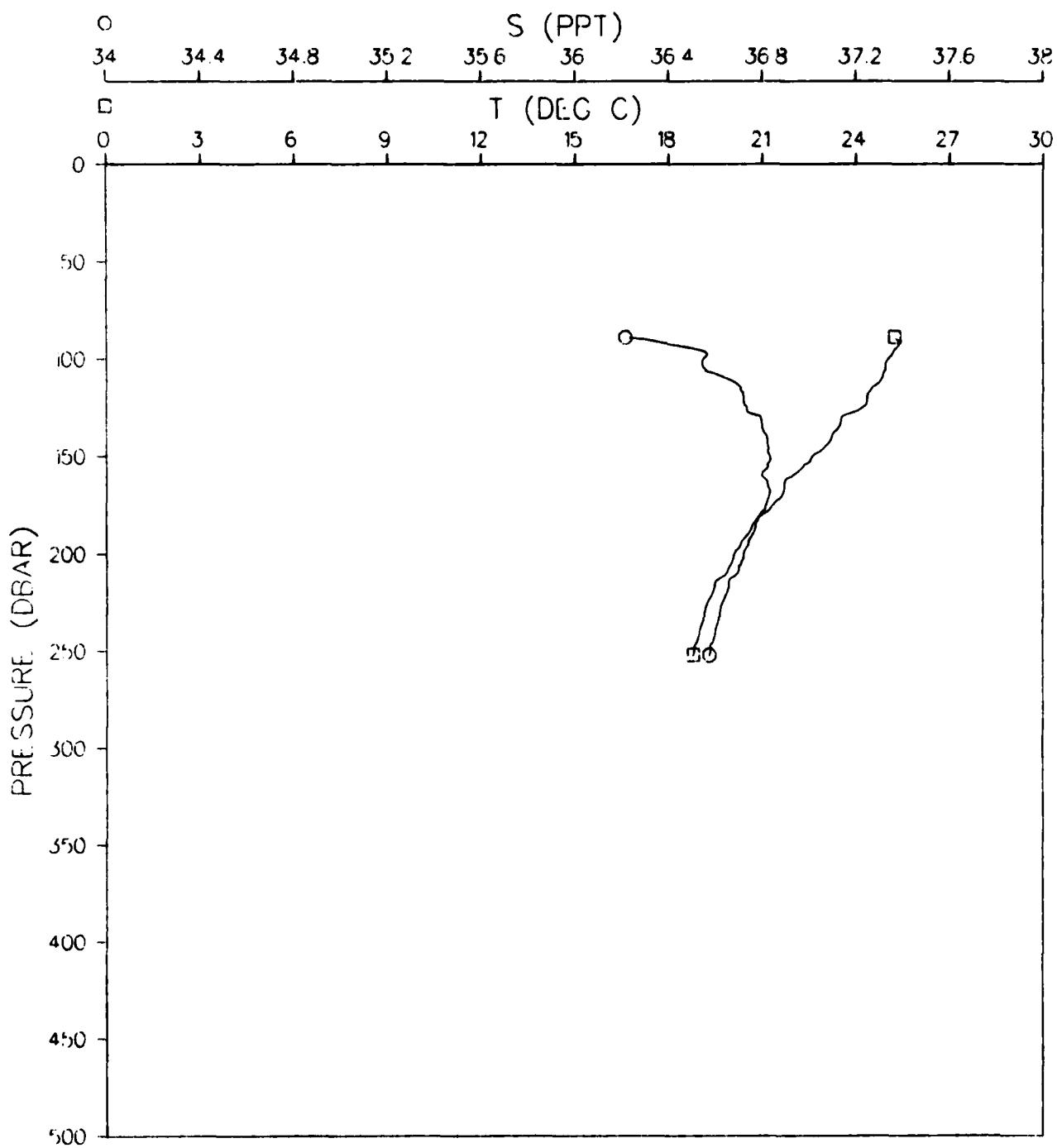


Figure 381.

ATOM 79 RECOVERY
STATION 200013

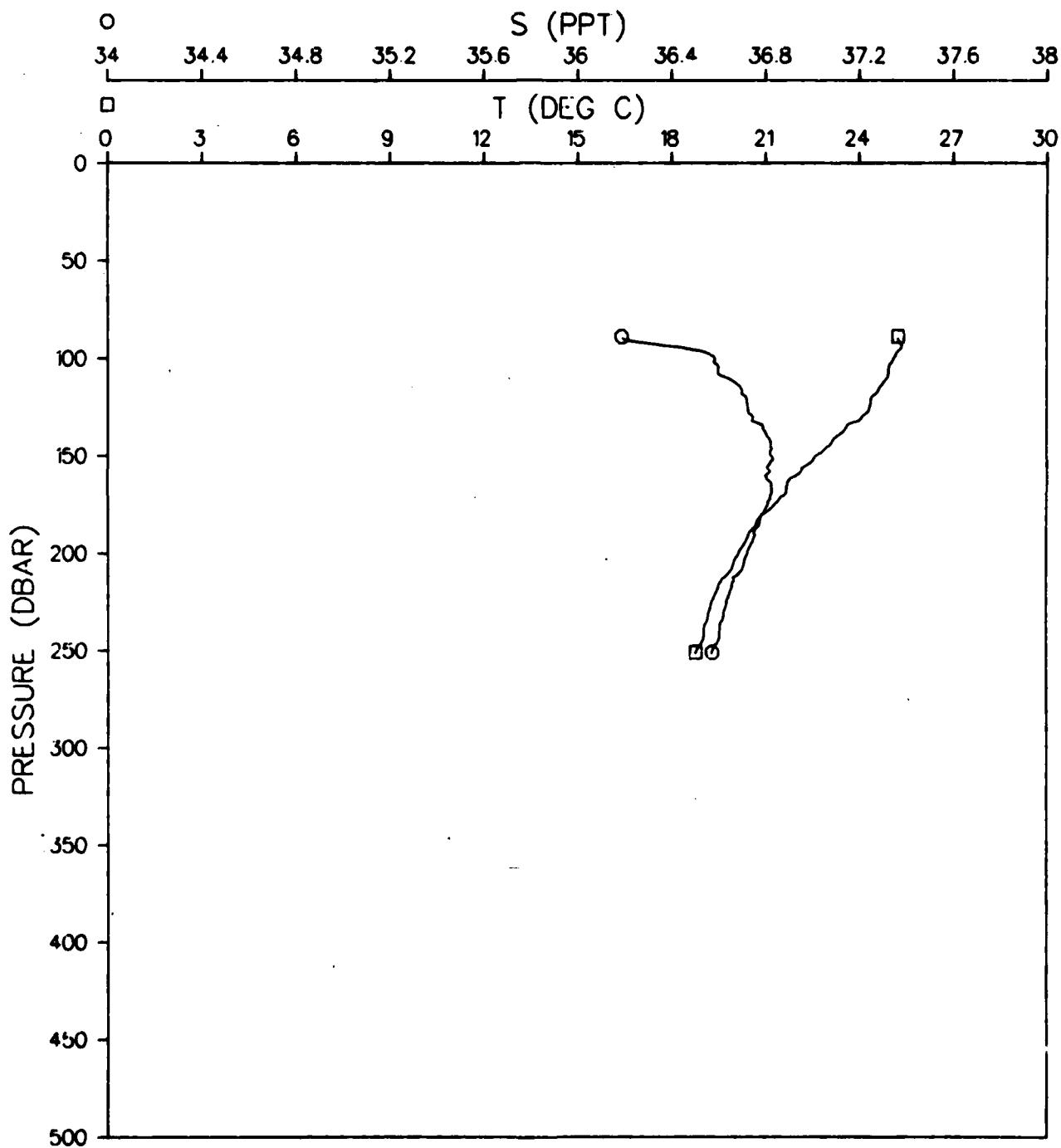


Figure 382.

ATOM 79 RECOVERY
STATION 200014

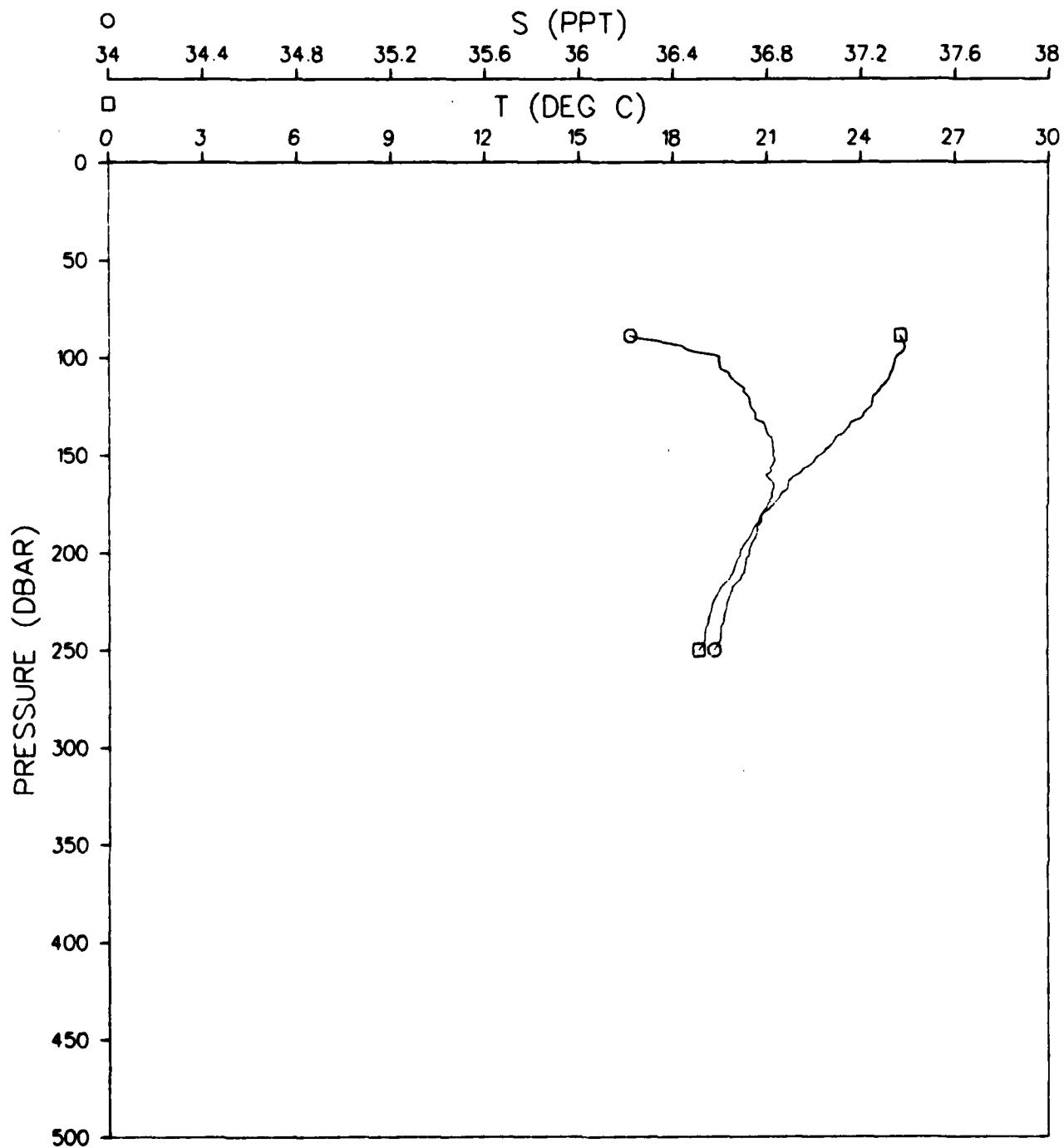


Figure 383.

ATOM 79 RECOVERY
STATION 200015

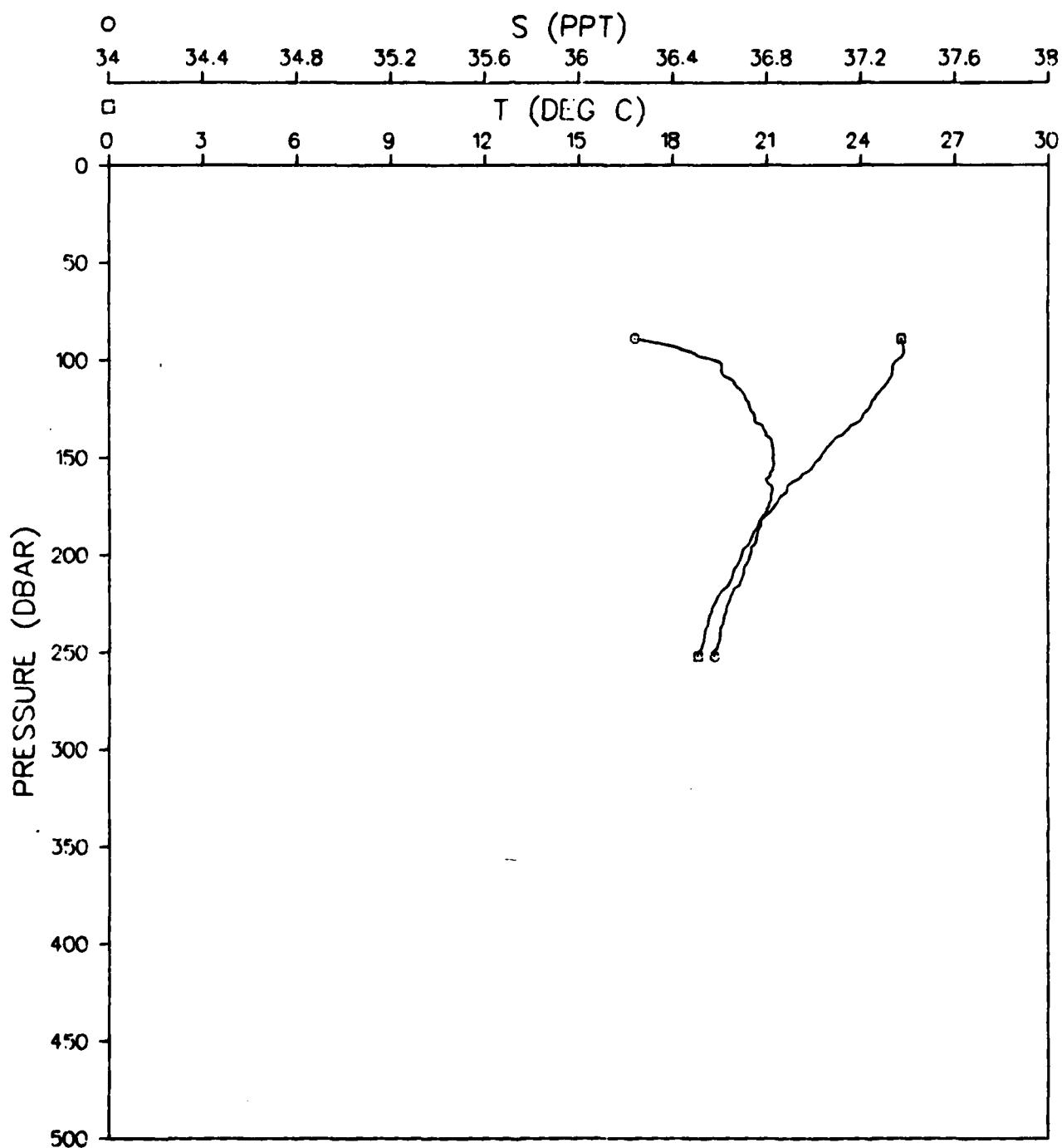


Figure 384.

ATOM 79 RECOVERY
STATION 200016

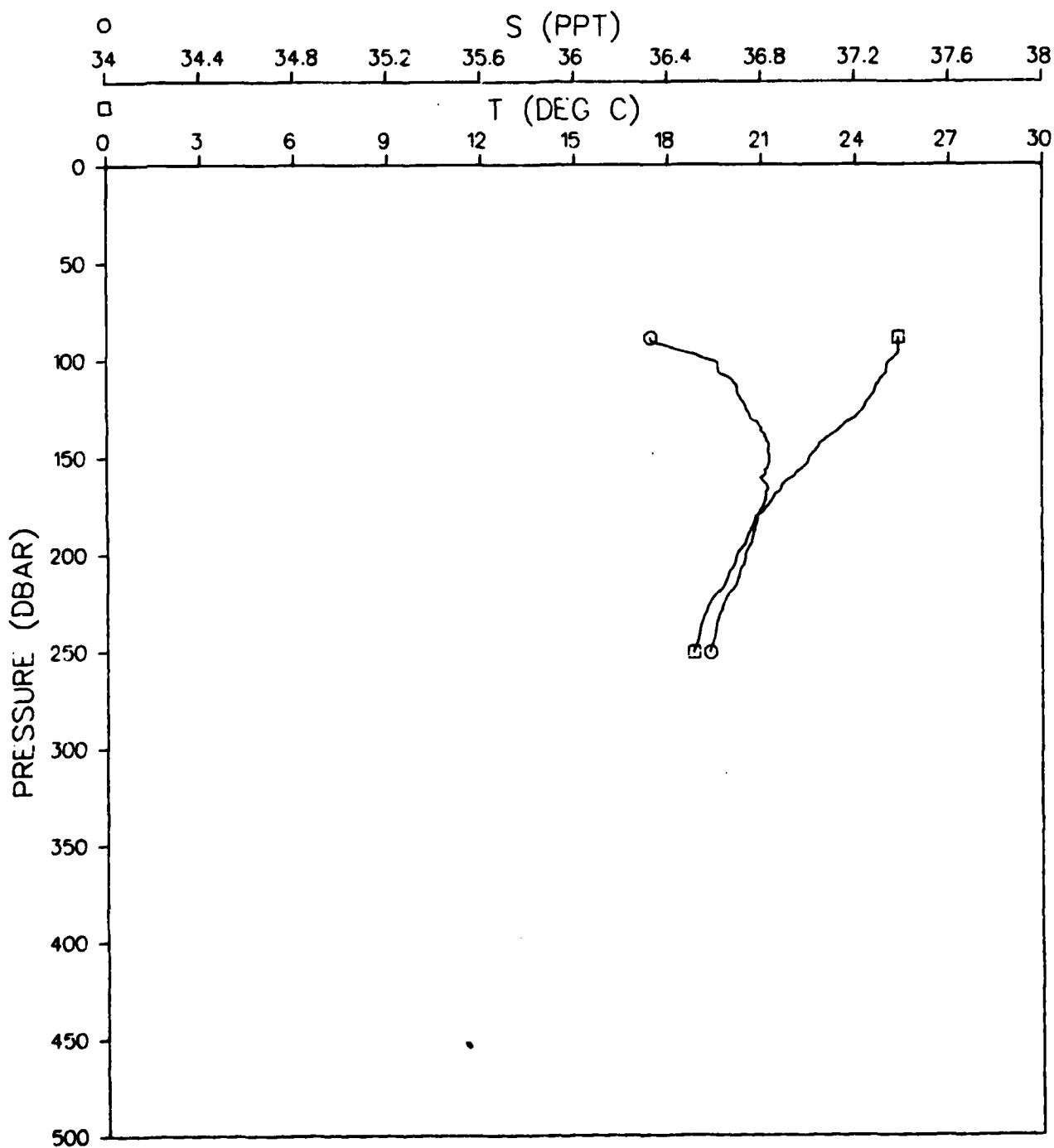


Figure 385.

ATOM 79 RECOVERY
STATION 200017

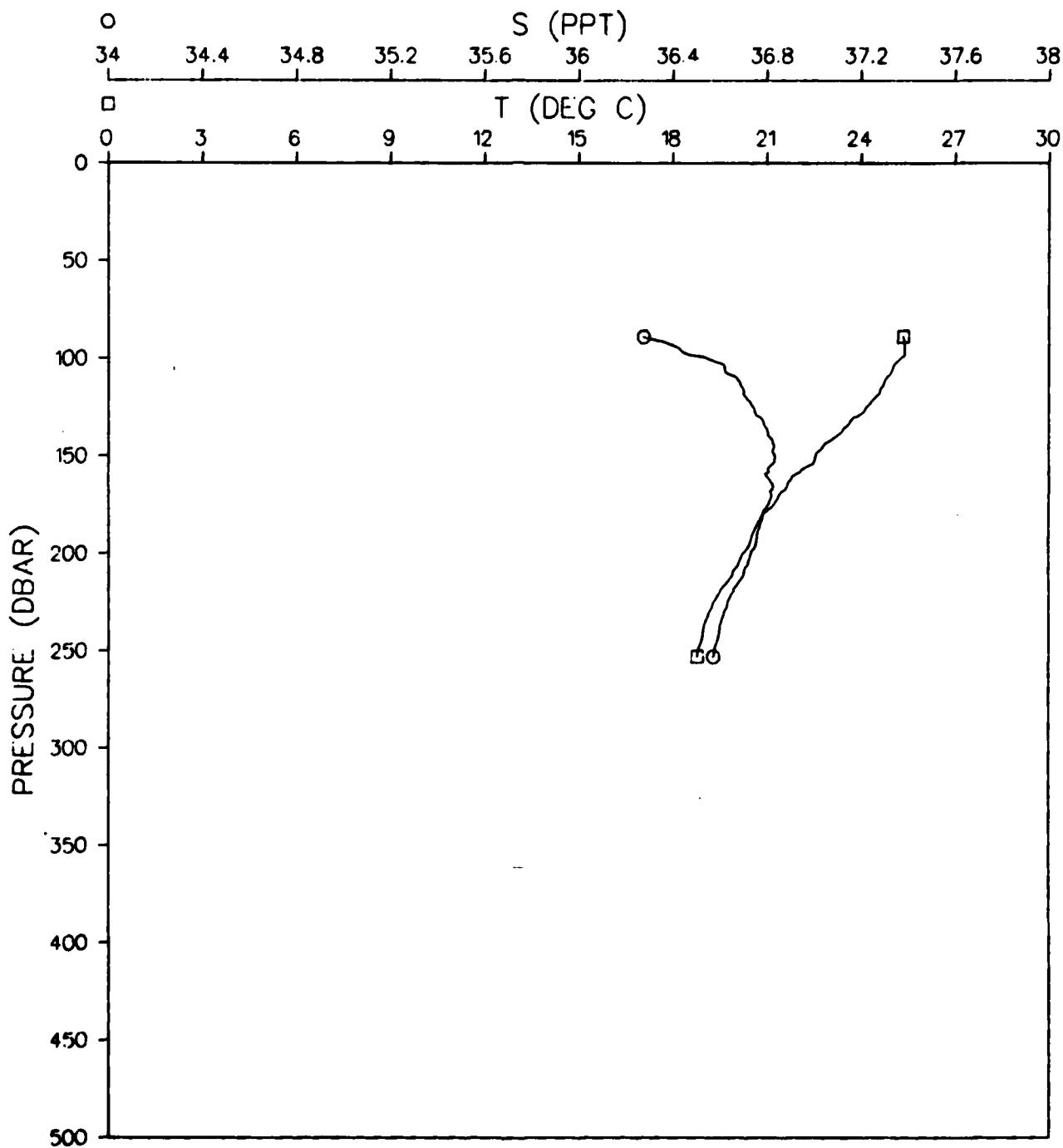


Figure 386.

ATOM 79 RECOVERY
STATION 200018

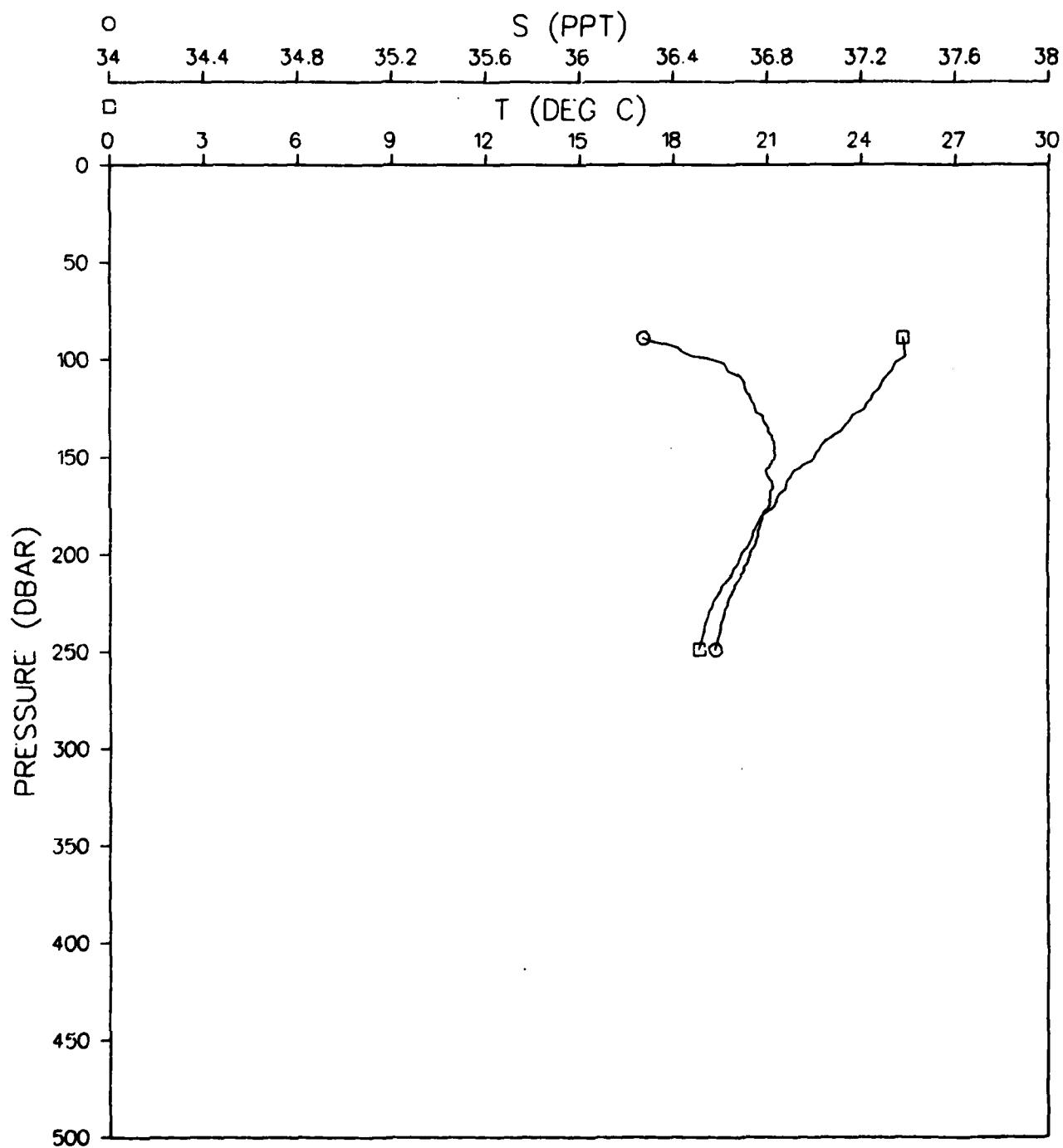


Figure 387.

ATOM 79 RECOVERY
STATION 200019

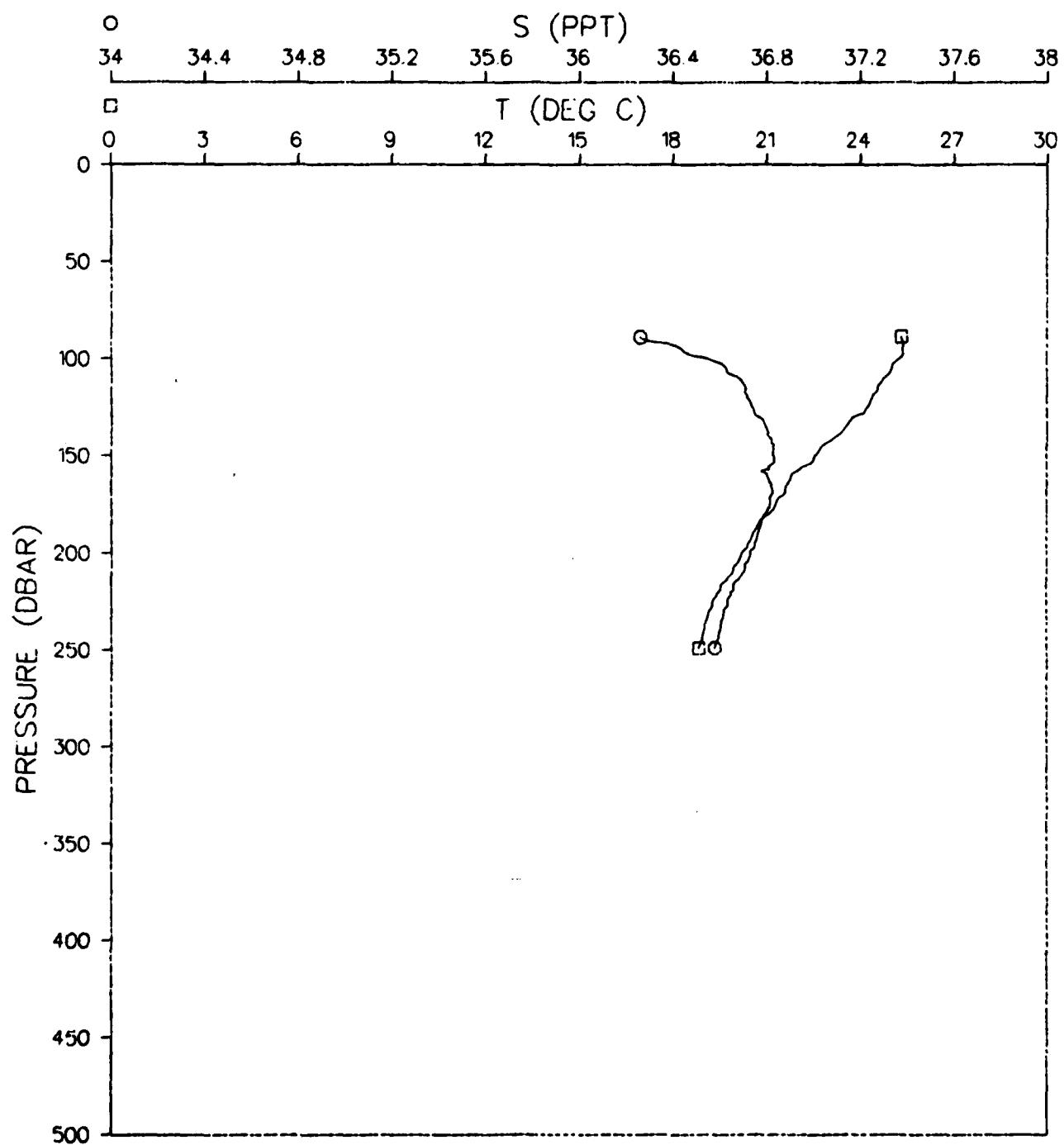


Figure 388.

ATOM 79 RECOVERY
STATION 200020

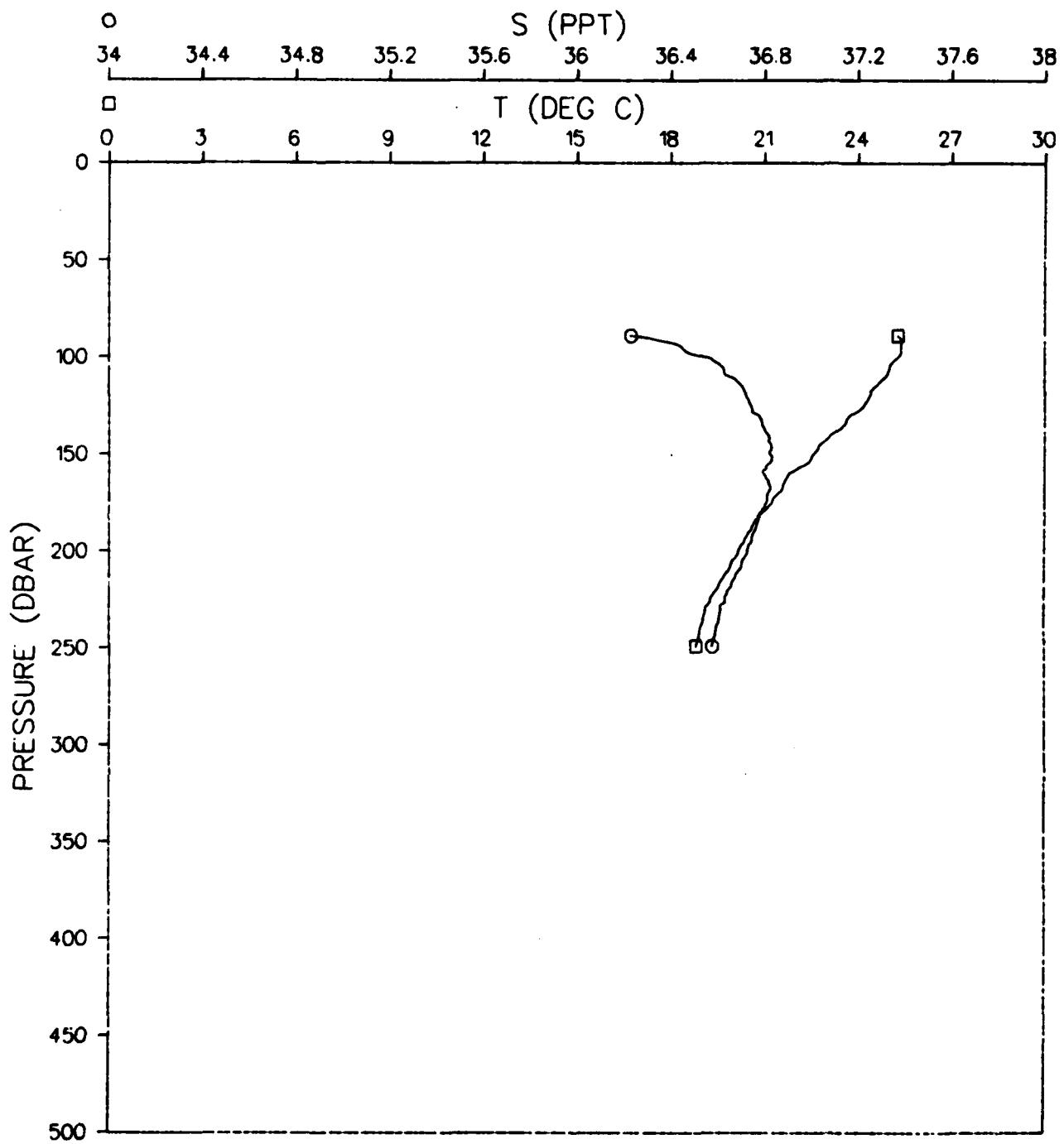


Figure 389.

ATOM 79 RECOVERY
STATION 200021

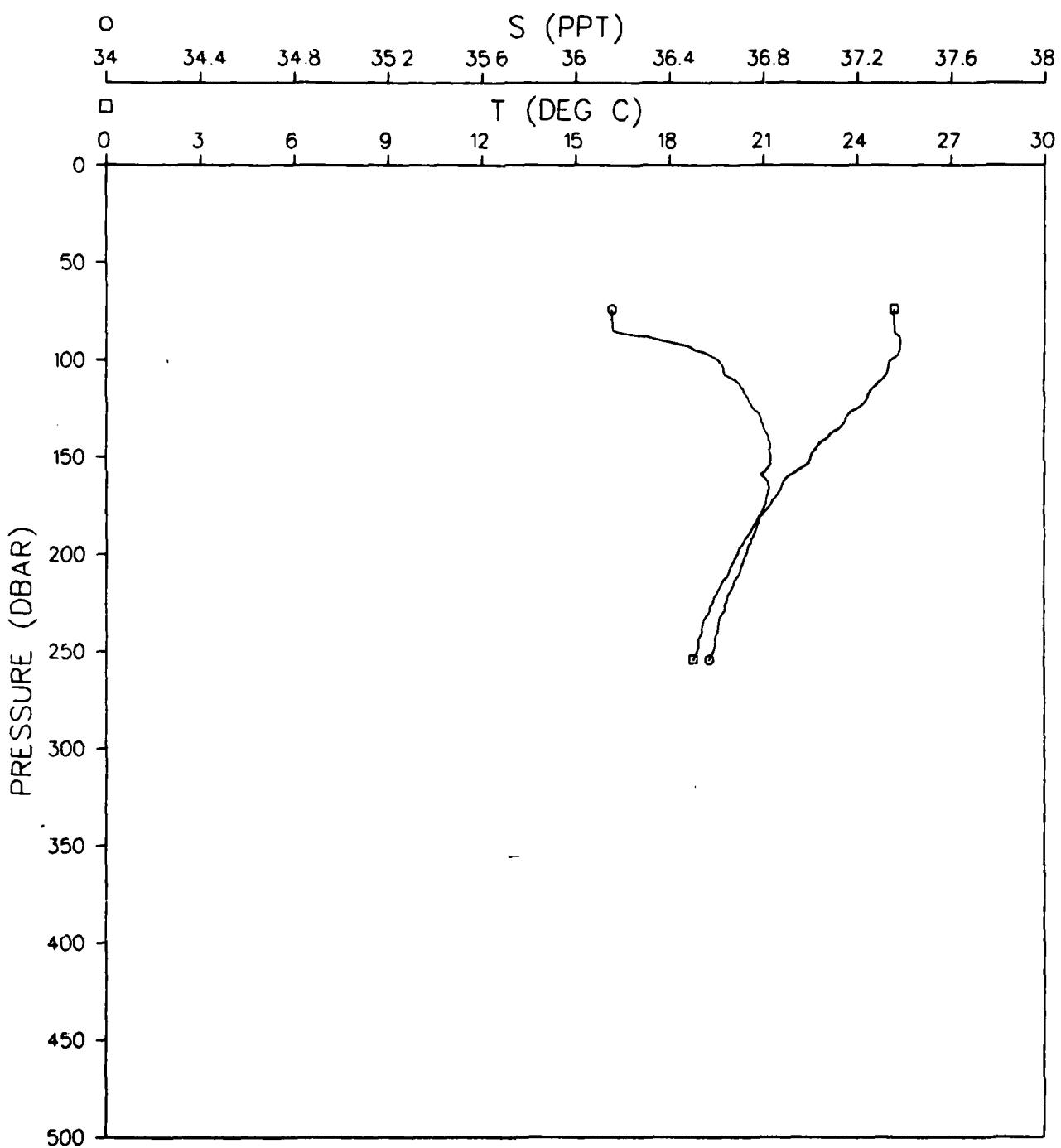


Figure 390.

ATOM 79 RECOVERY
STATION 200022

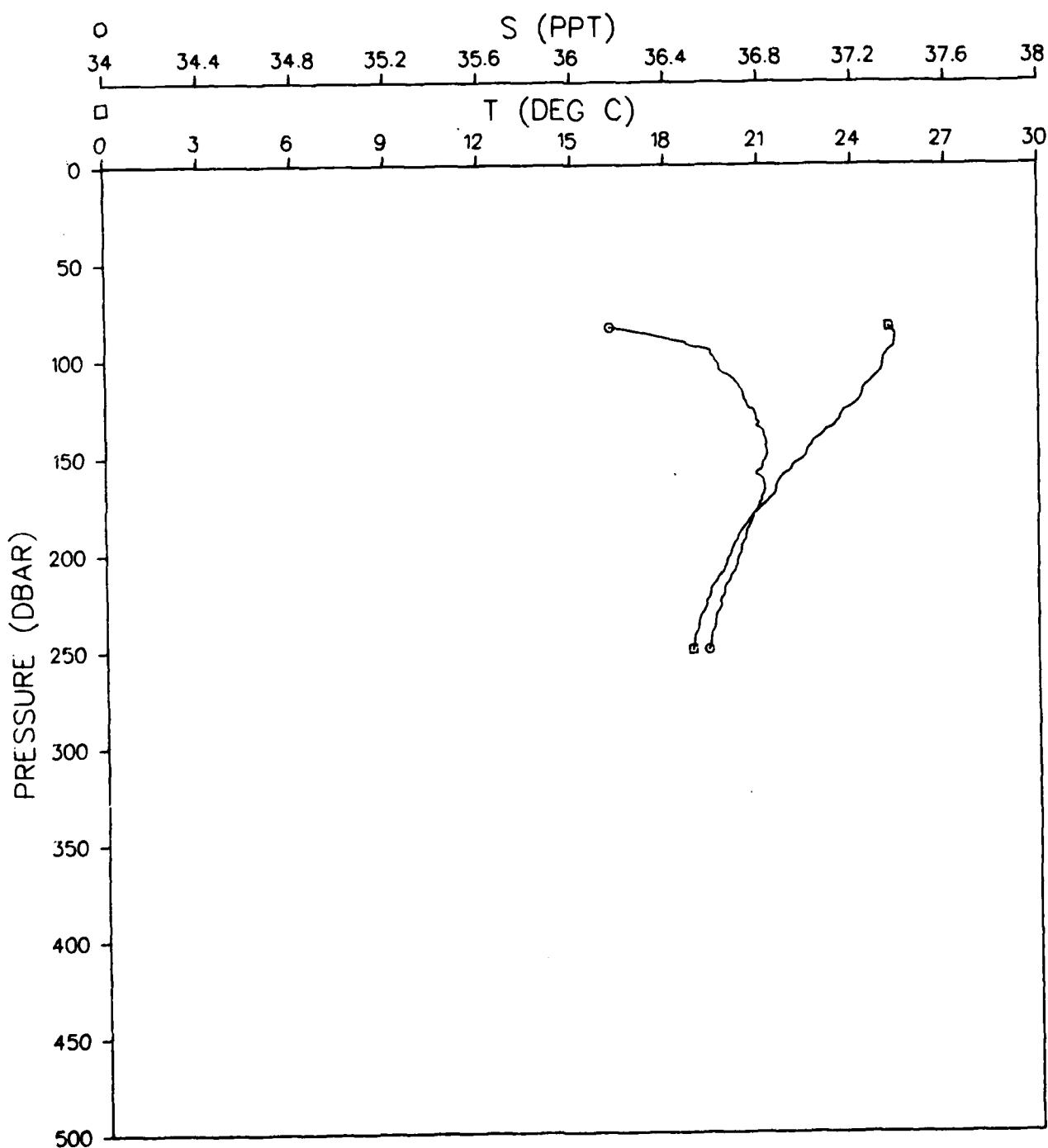


Figure 391.

ATOM 79 RECOVERY
STATION 200023

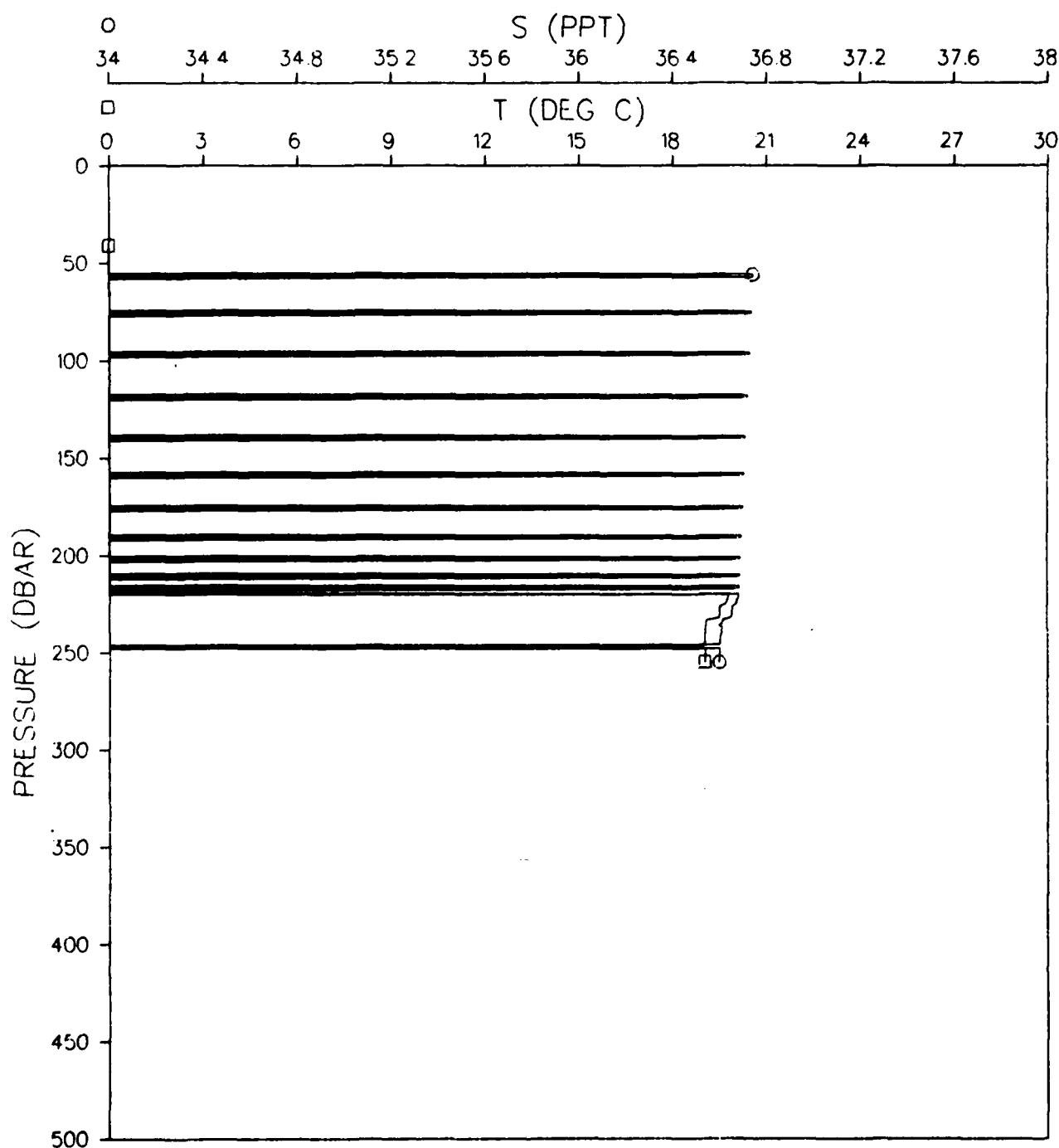


Figure 392.

ATOM 79 RECOVERY
STATION 200024

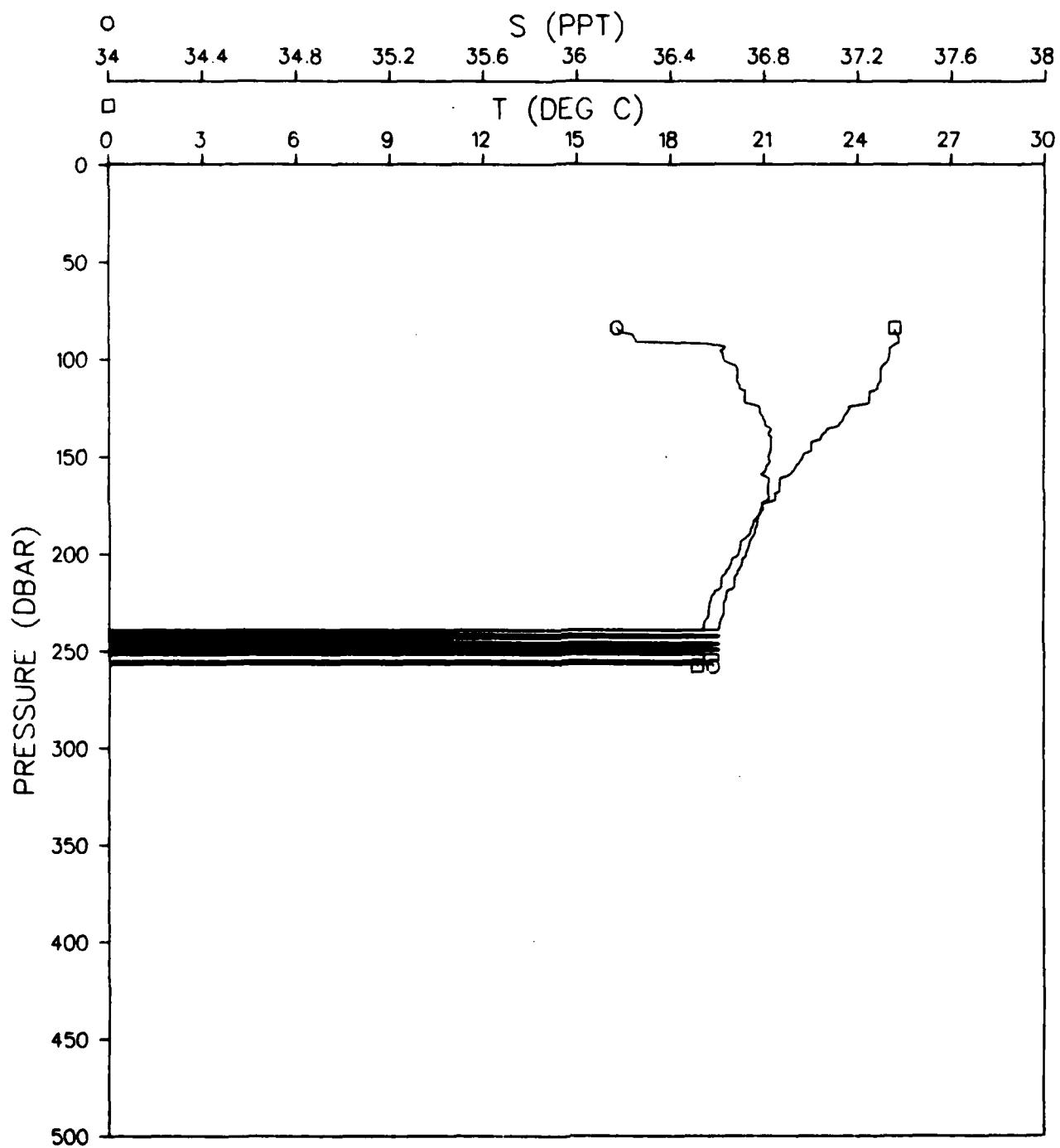


Figure 393,

ATOM 79 RECOVERY
STATION 200025

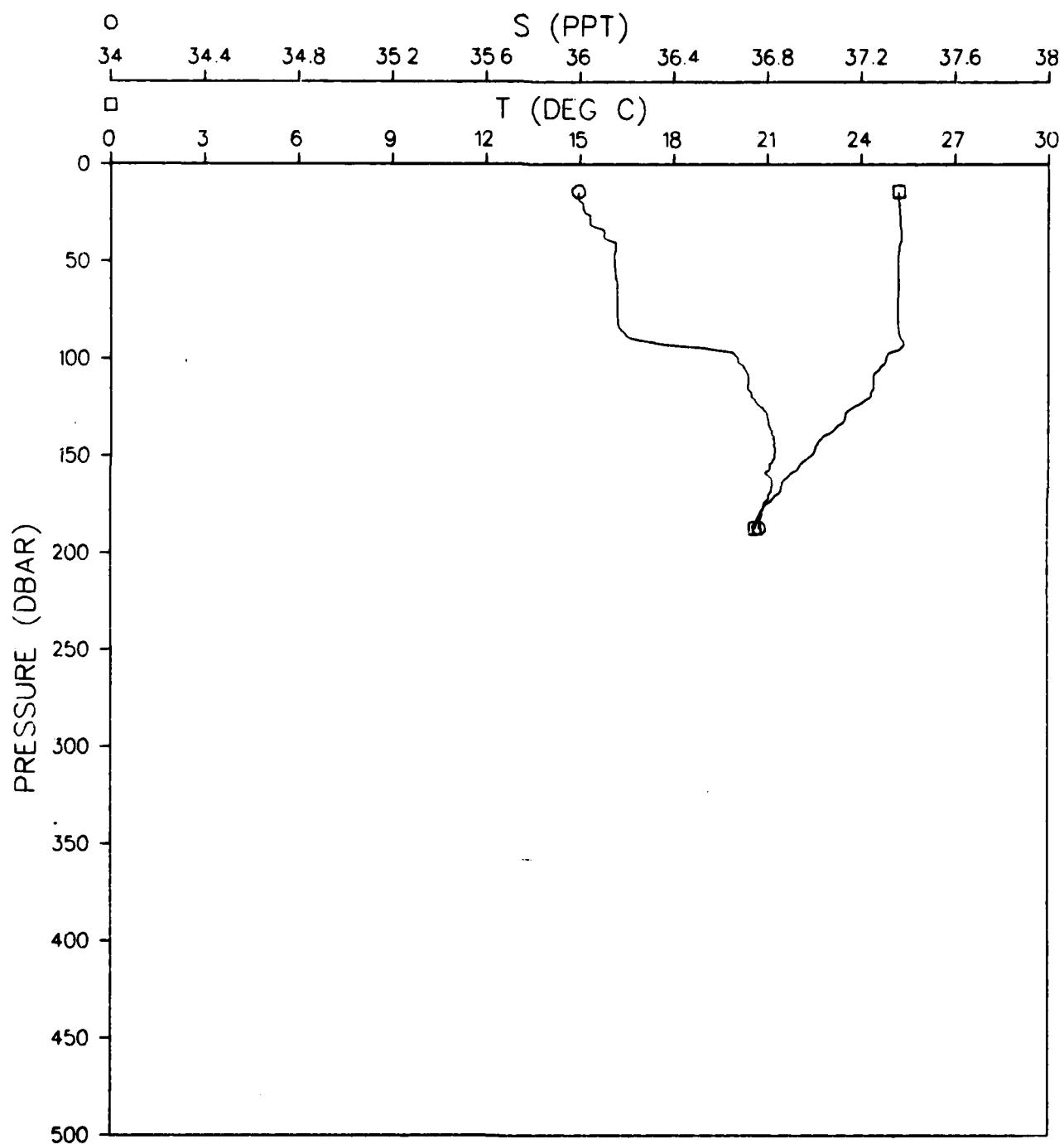


Figure 394.

ATOM 79 RECOVERY
STATION 200026

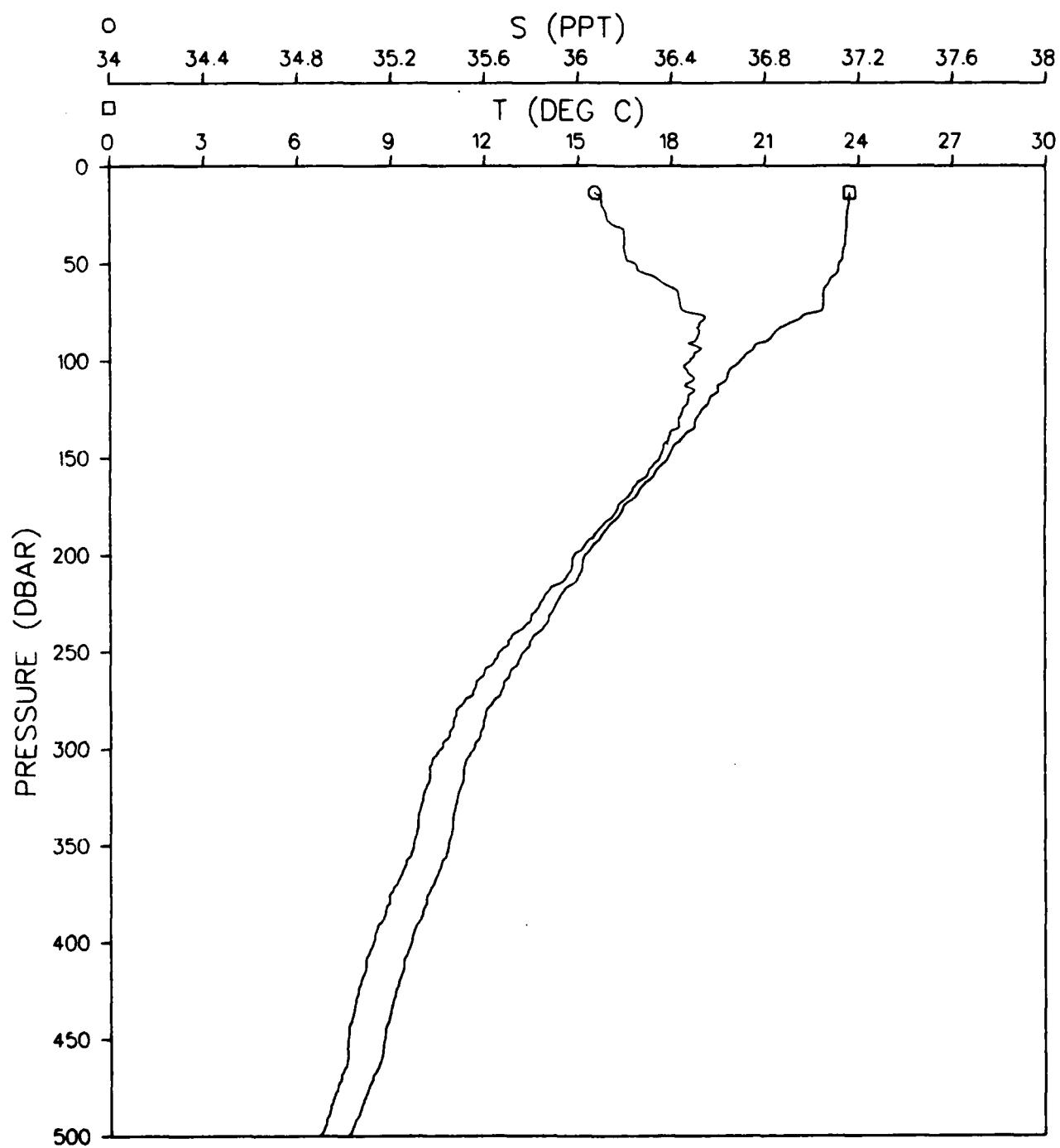


Figure 395.

ATOM 79 RECOVERY
STATION 200027

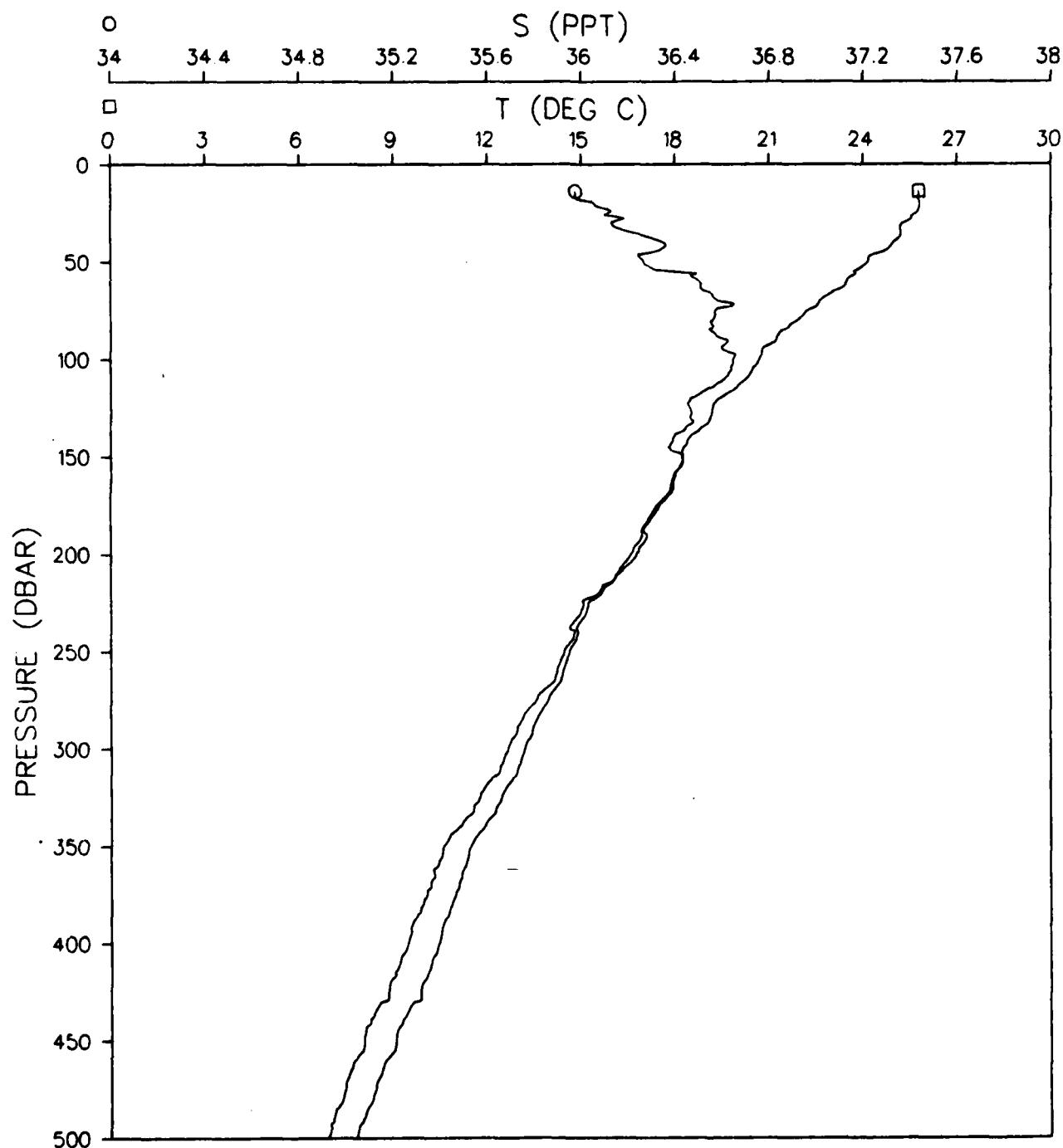


Figure 396.

ATOM 79 RECOVERY
STATION 200028

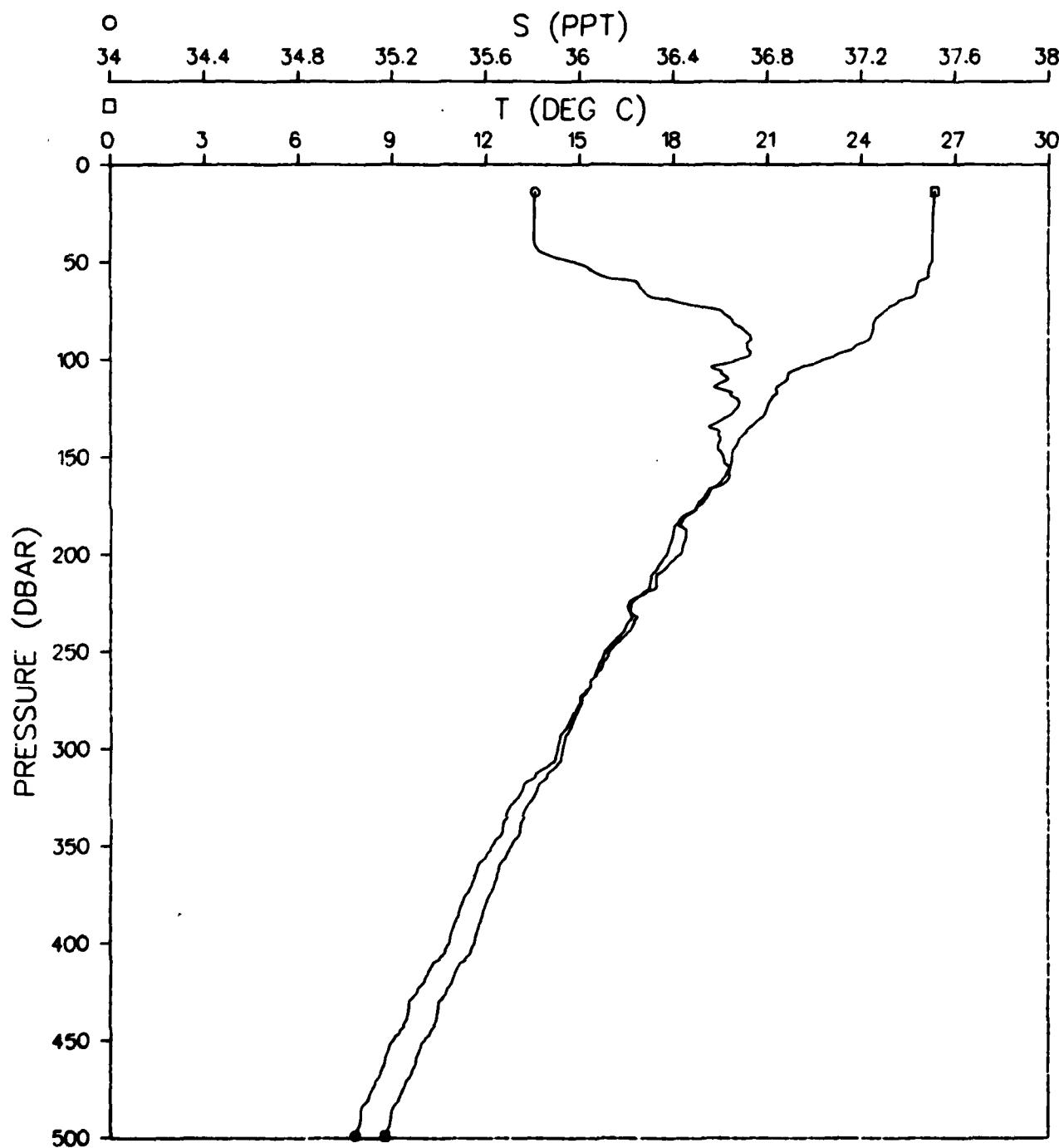


Figure 397.

ATOM 79 RECOVERY
STATION 200029

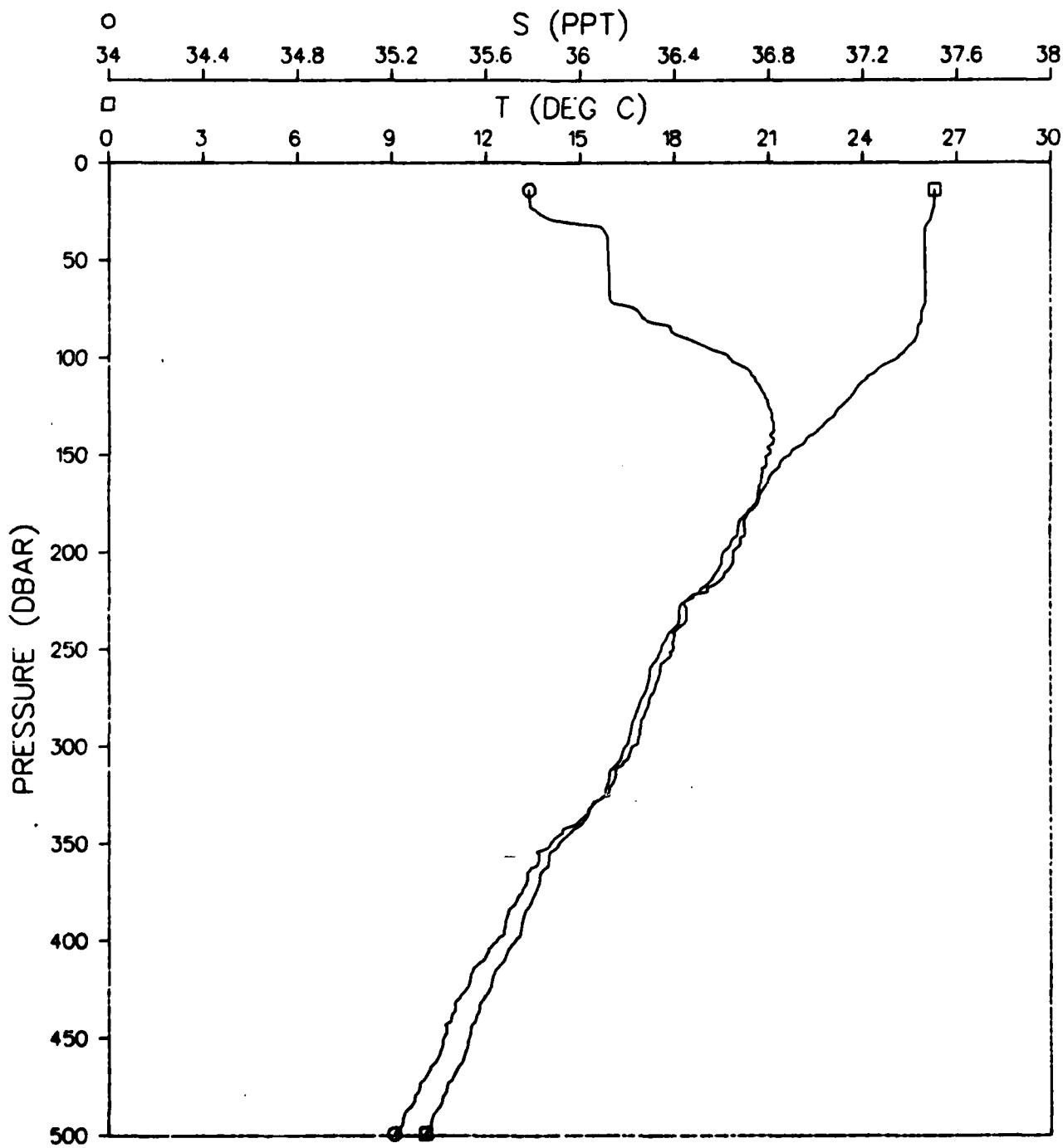


Figure 398.

ATOM 79 RECOVERY
STATION 200030

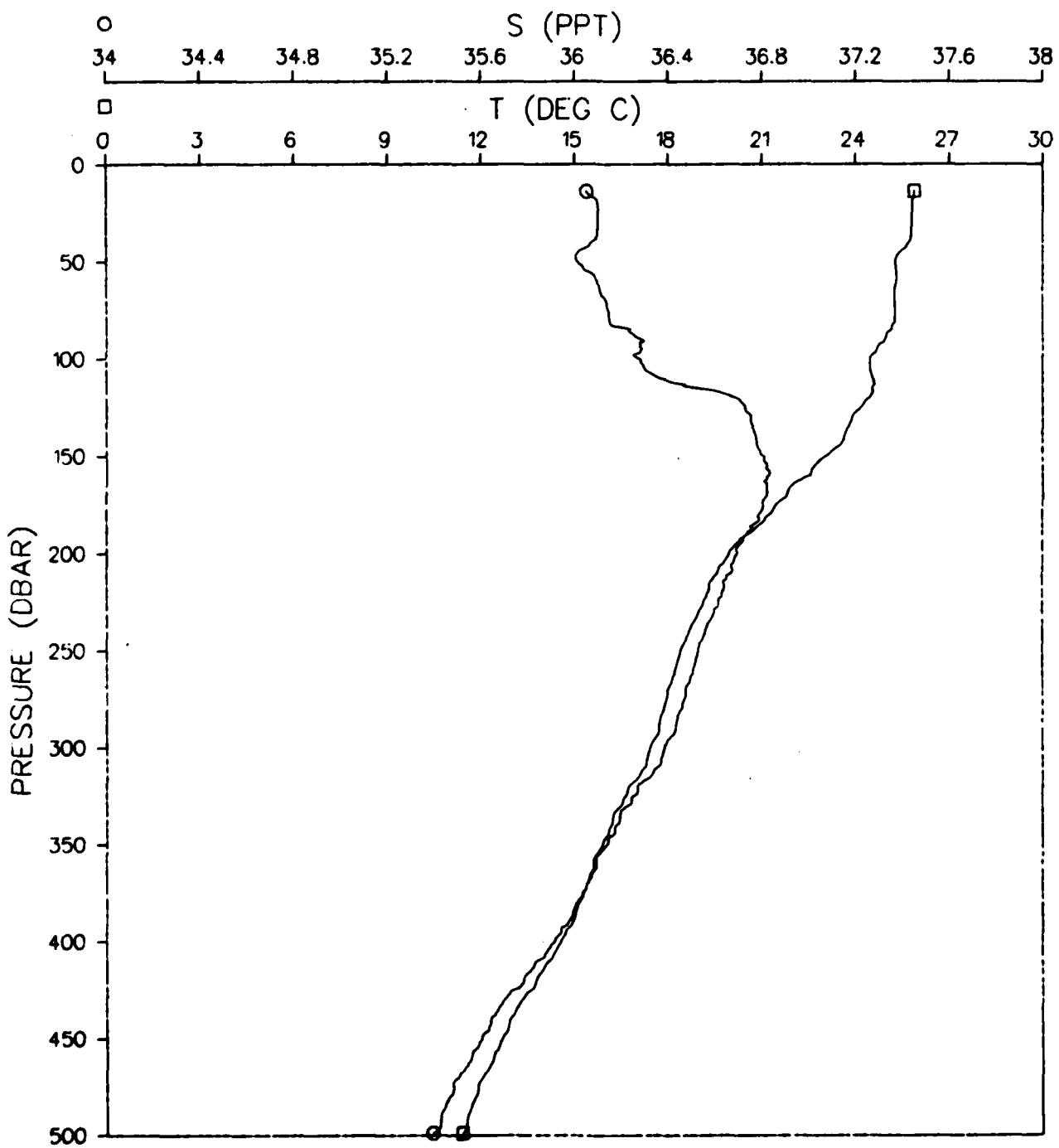


Figure 399.

ATOM 79 RECOVERY
STATION 200031

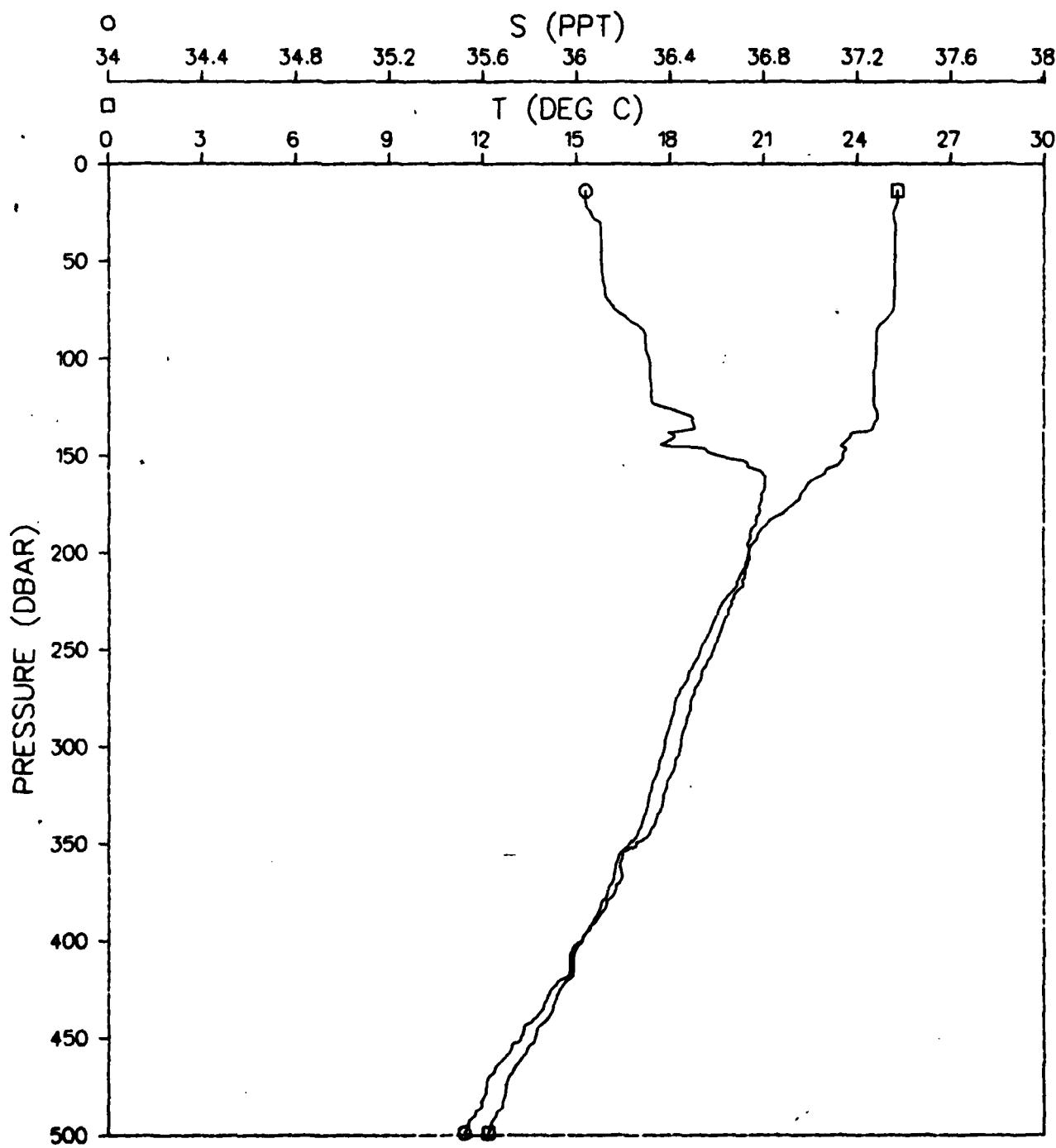


Figure 400.

ATOM 79 RECOVERY
STATION 200032

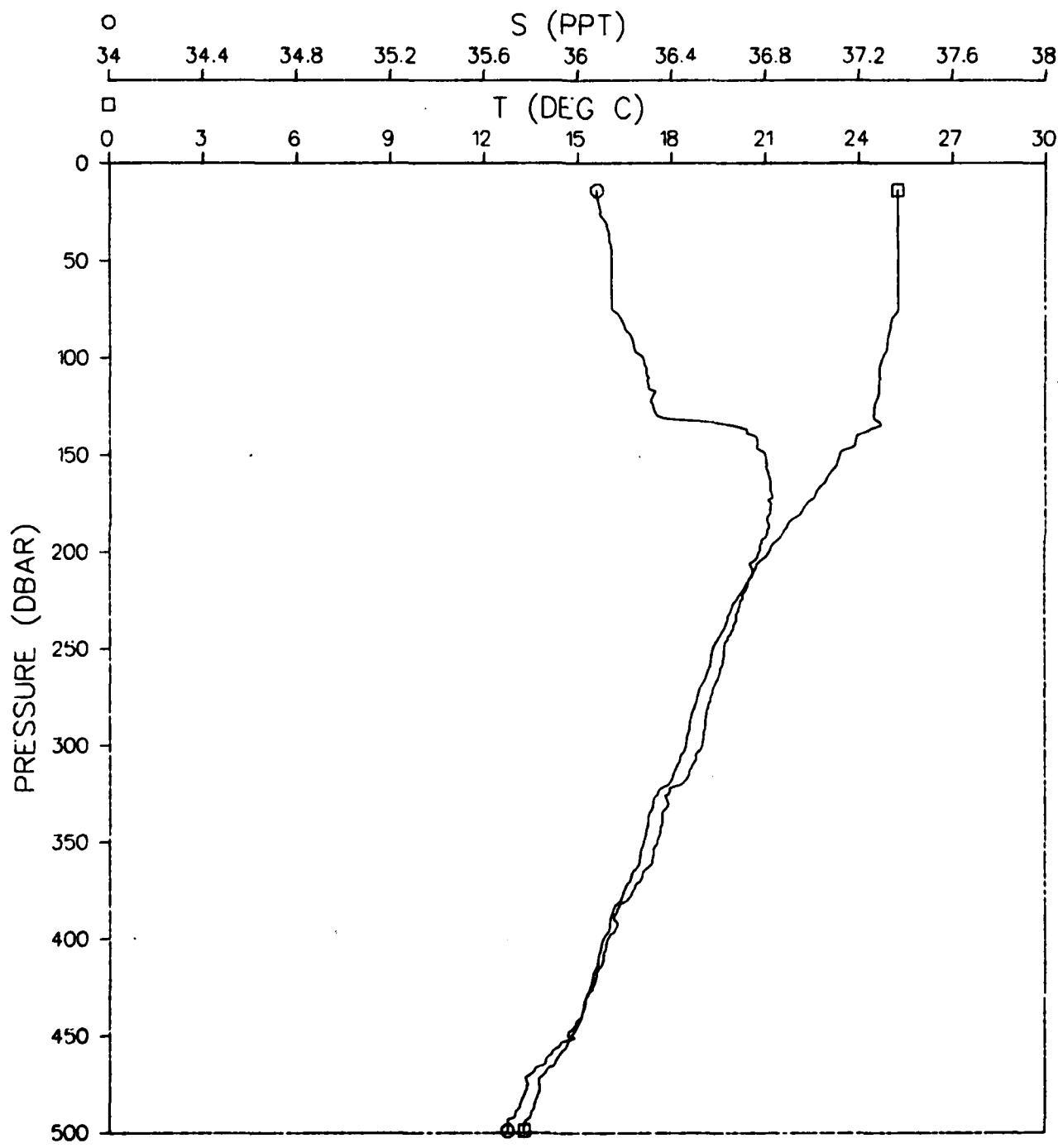


Figure 401.

ATOM 79 RECOVERY
STATION 200033

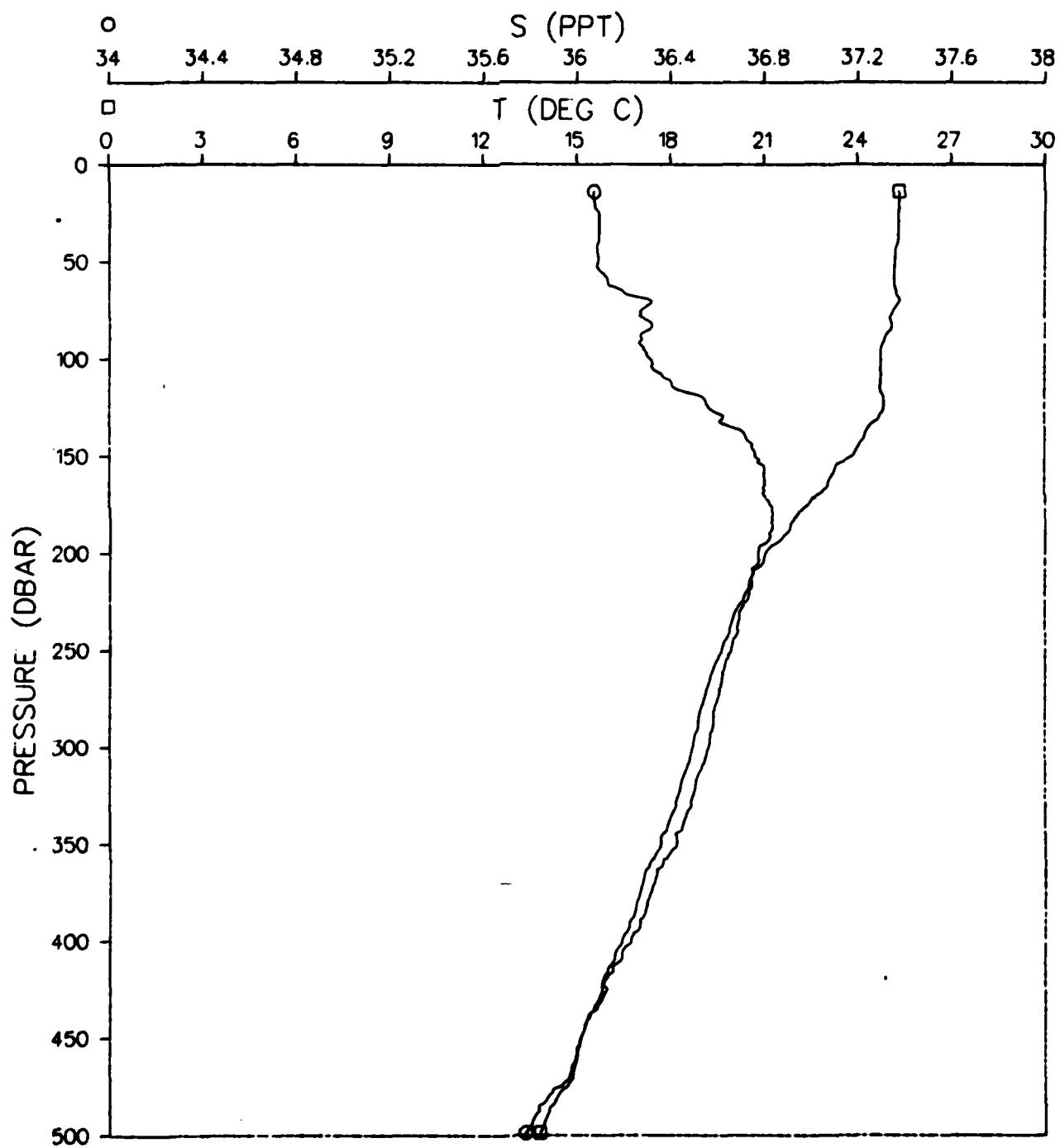


Figure 402.

ATOM 79 RECOVERY
STATION 200034

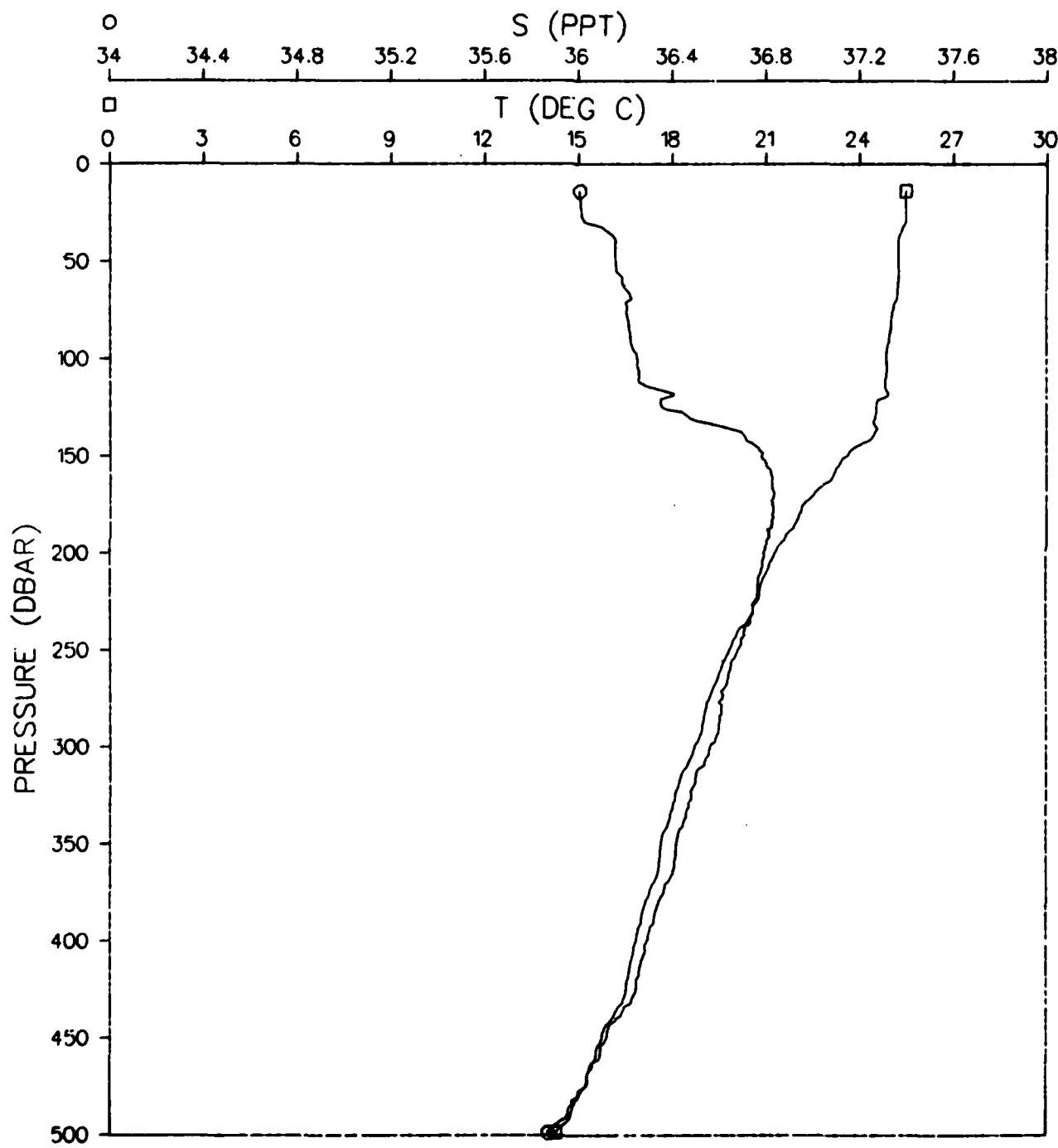


Figure 403.

ATOM 79 RECOVERY
STATION 200035

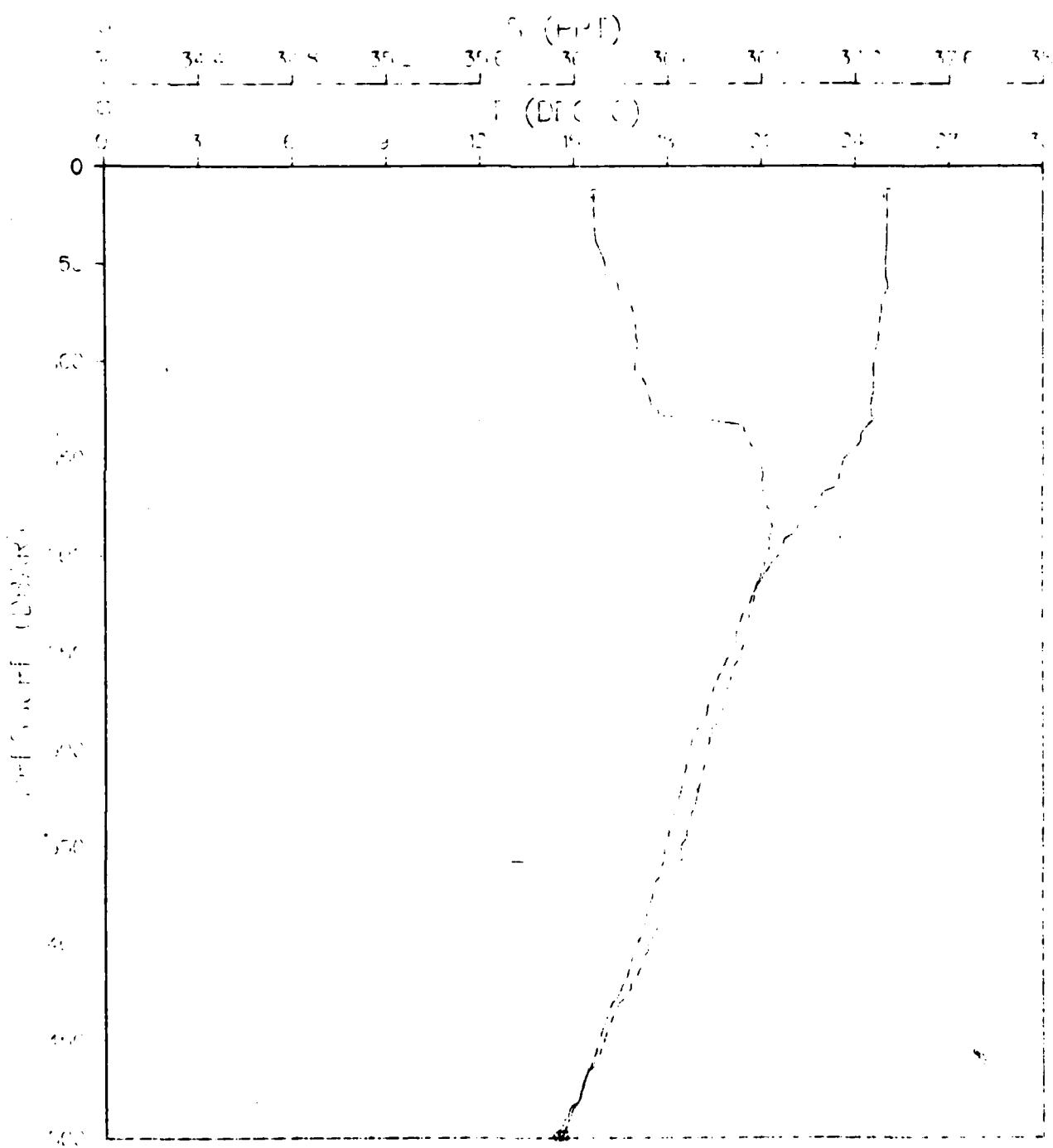


Figure 404.

ATOM 79 RECOVERY
STATION 200036

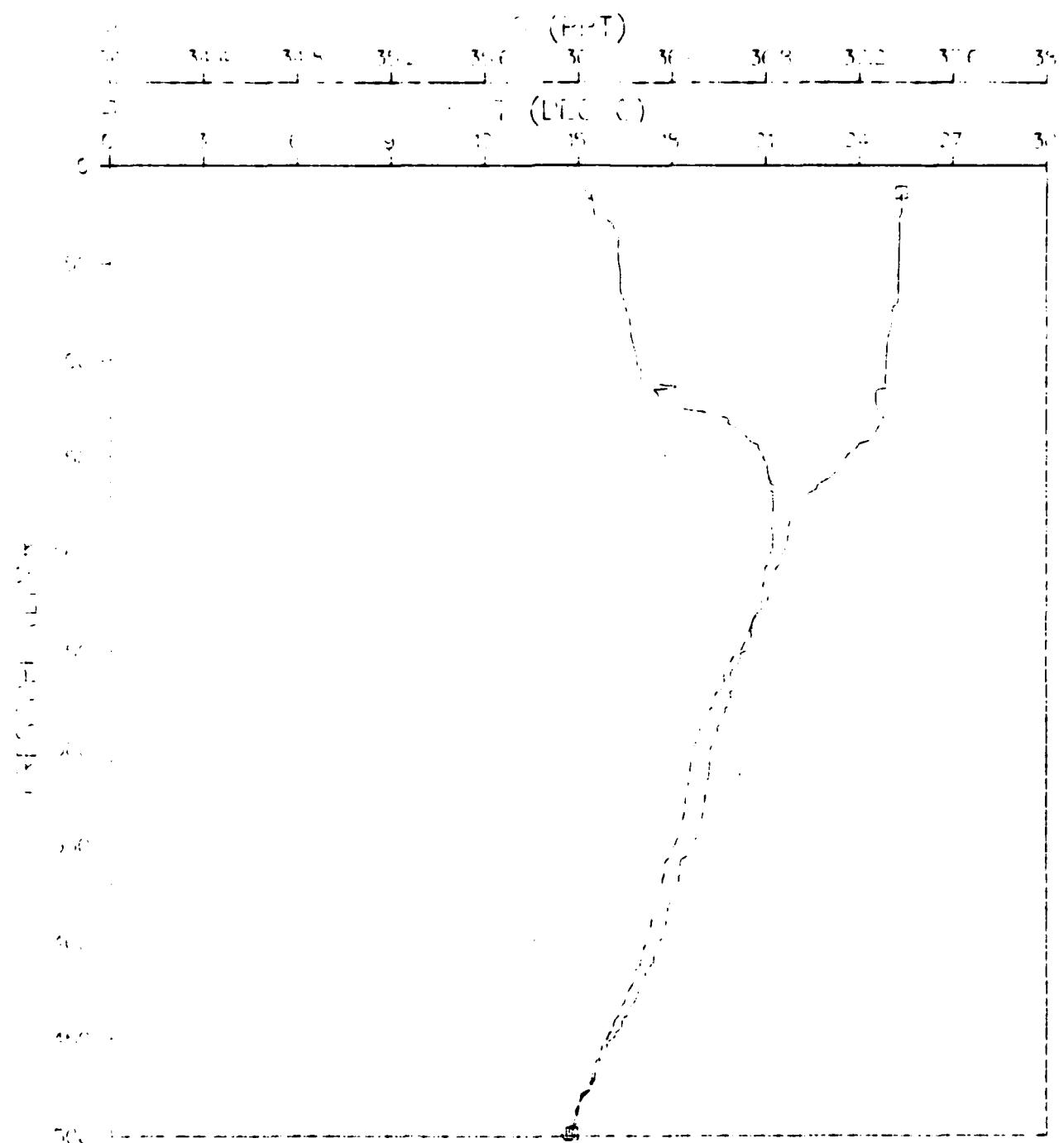


Figure 405.

ATOM 79 RECOVERY
STATION 200037

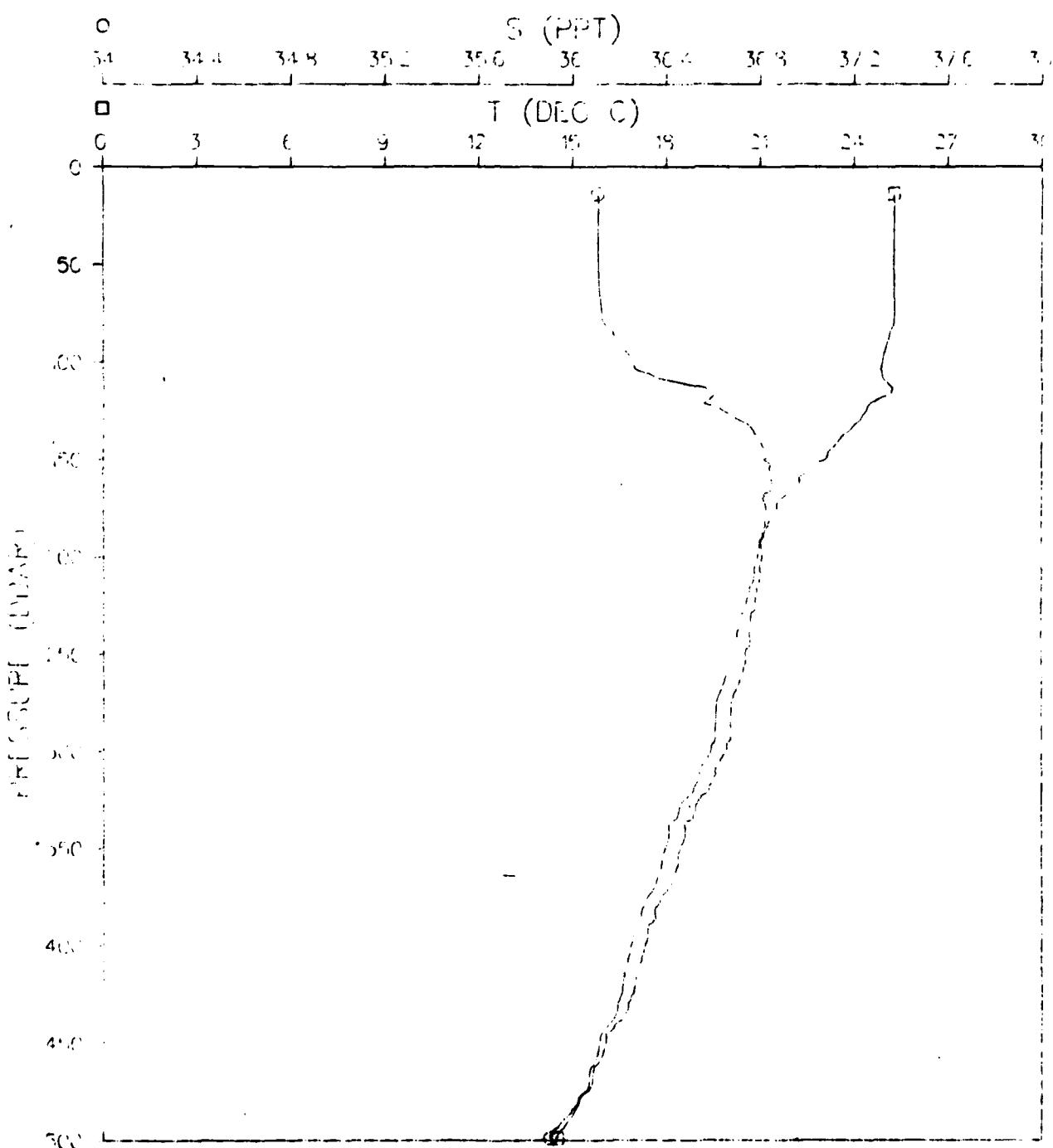


Figure 406.

ATOM 79 RECOVERY
STATION 200038

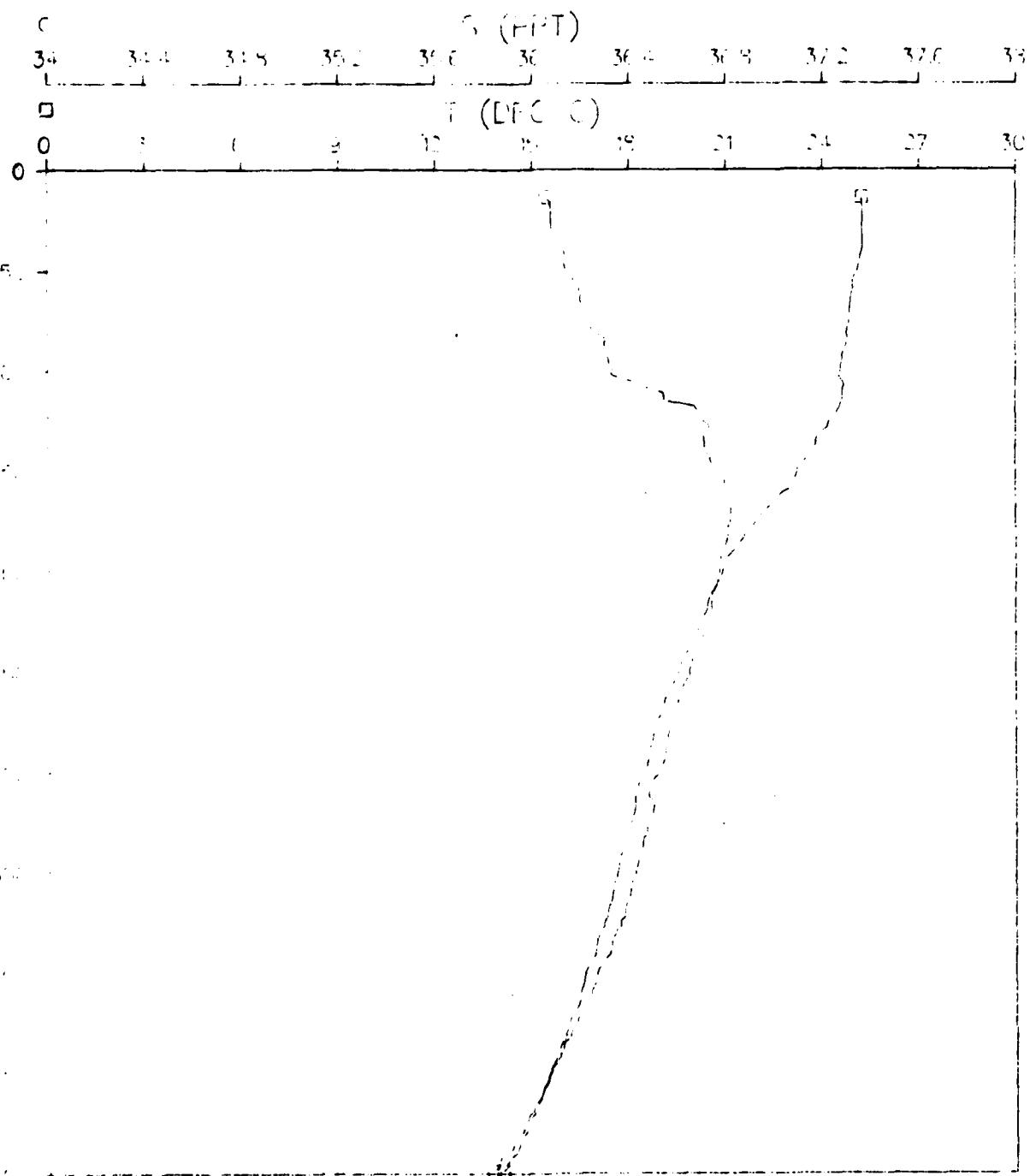


Figure 407.

ATOM-79 RECOVERY
STATION 200059

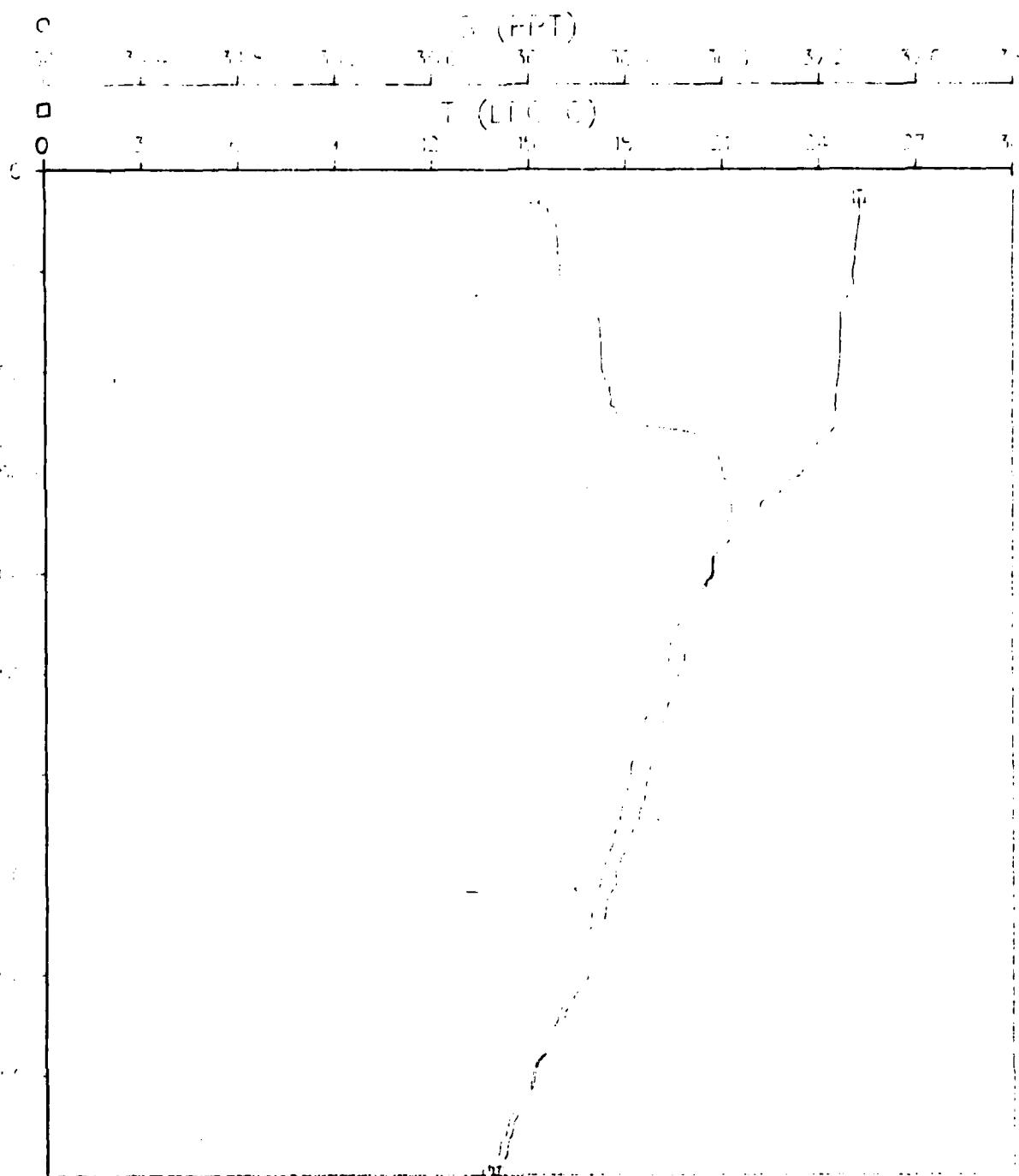


Figure 408.

ATOM 79 RECOVERY
STATION 200040

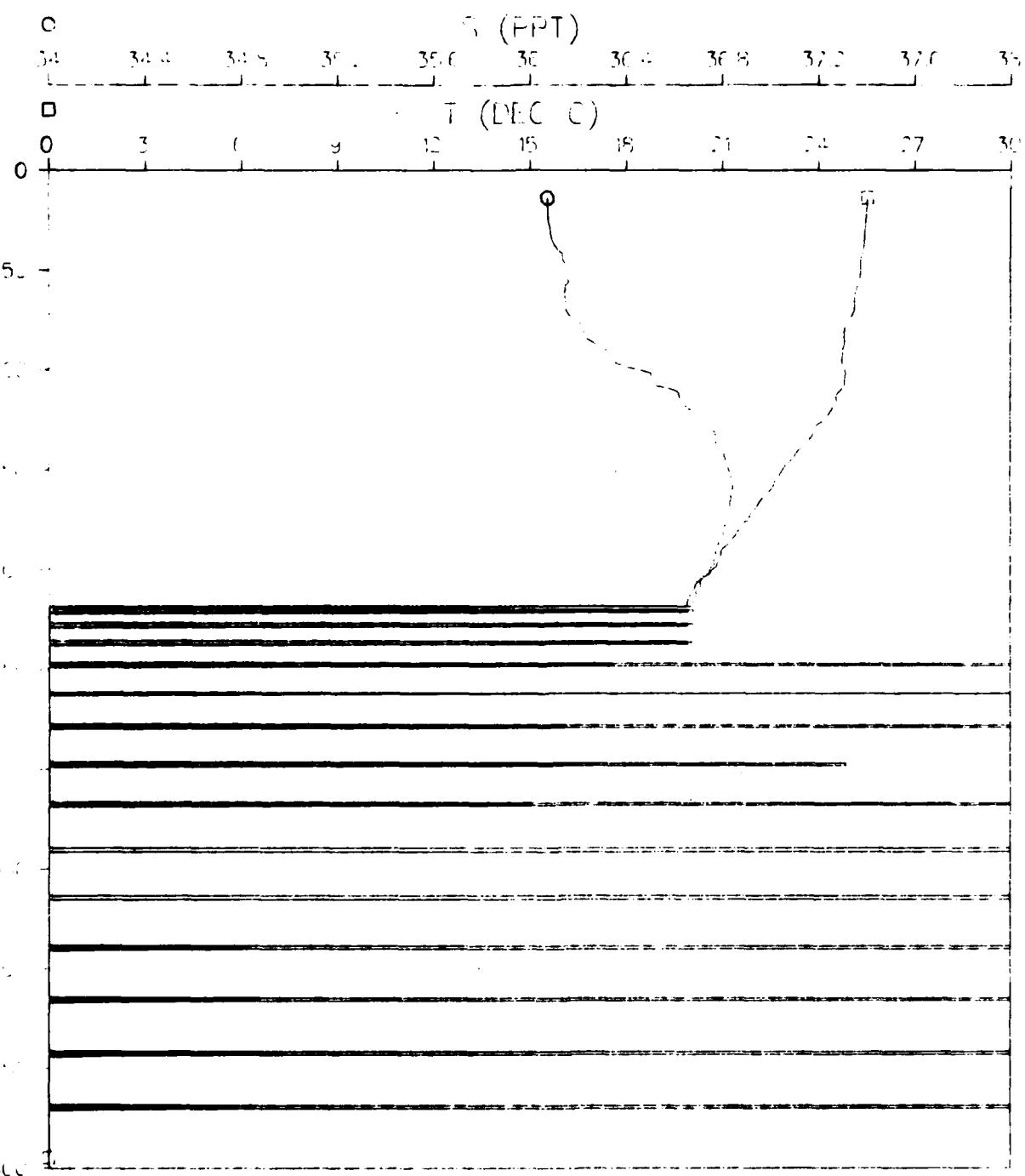


Figure 409.

ATOM 79 RECOVERY
STATION 200001

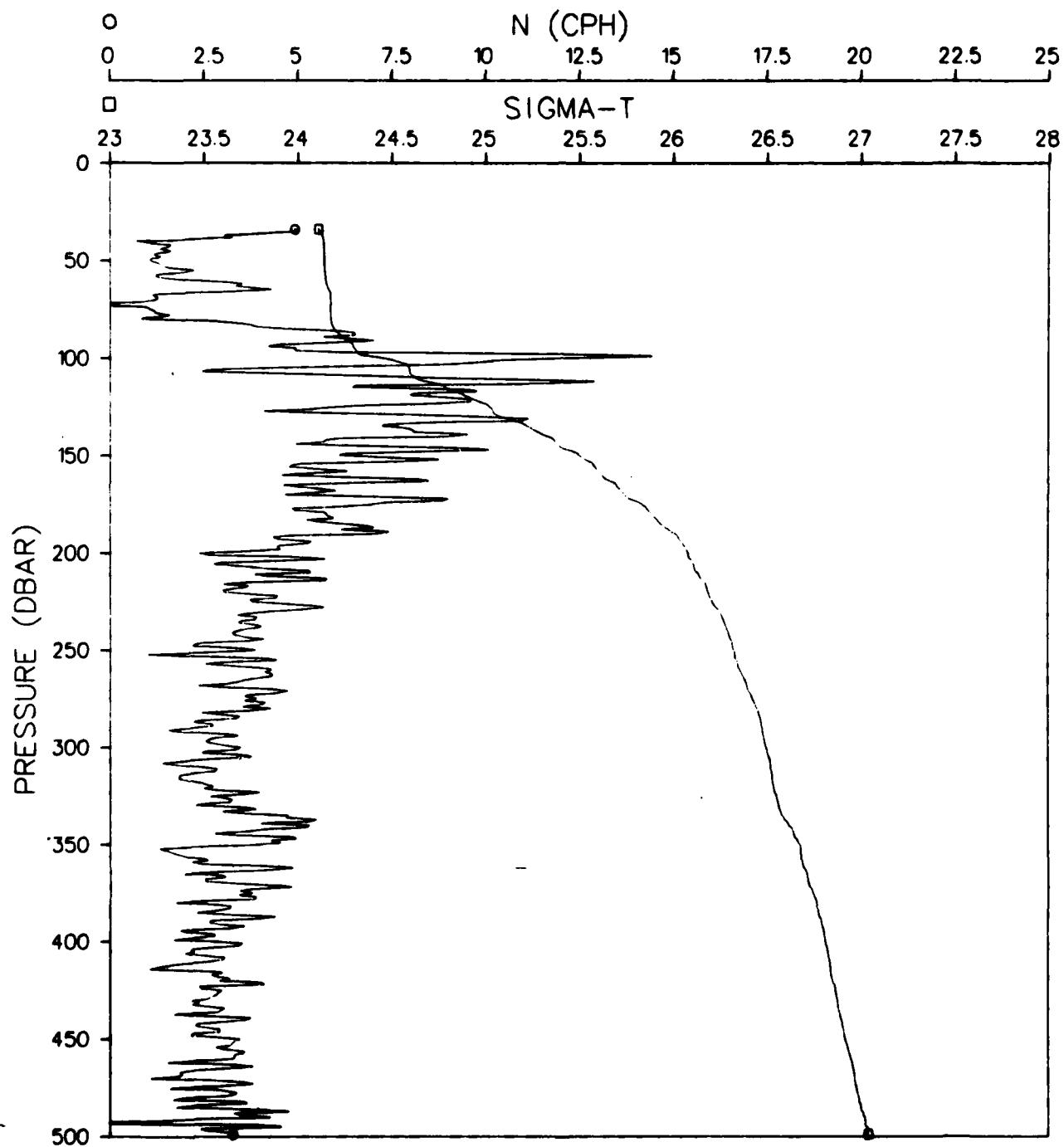


Figure 410.

ATOM 79 RECOVERY
STATION 200002

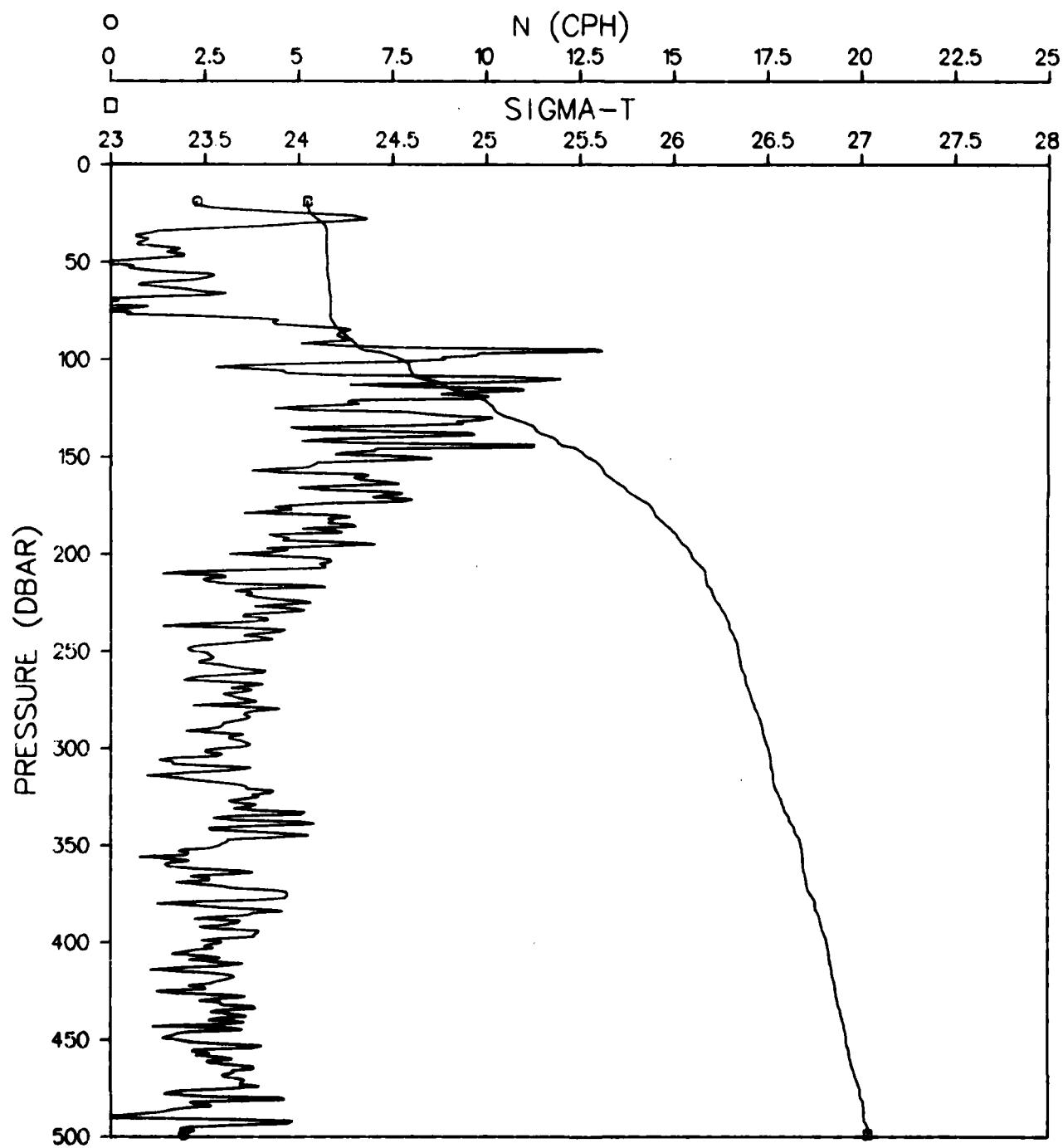


Figure 411.

ATOM 79 RECOVERY
STATION 200003

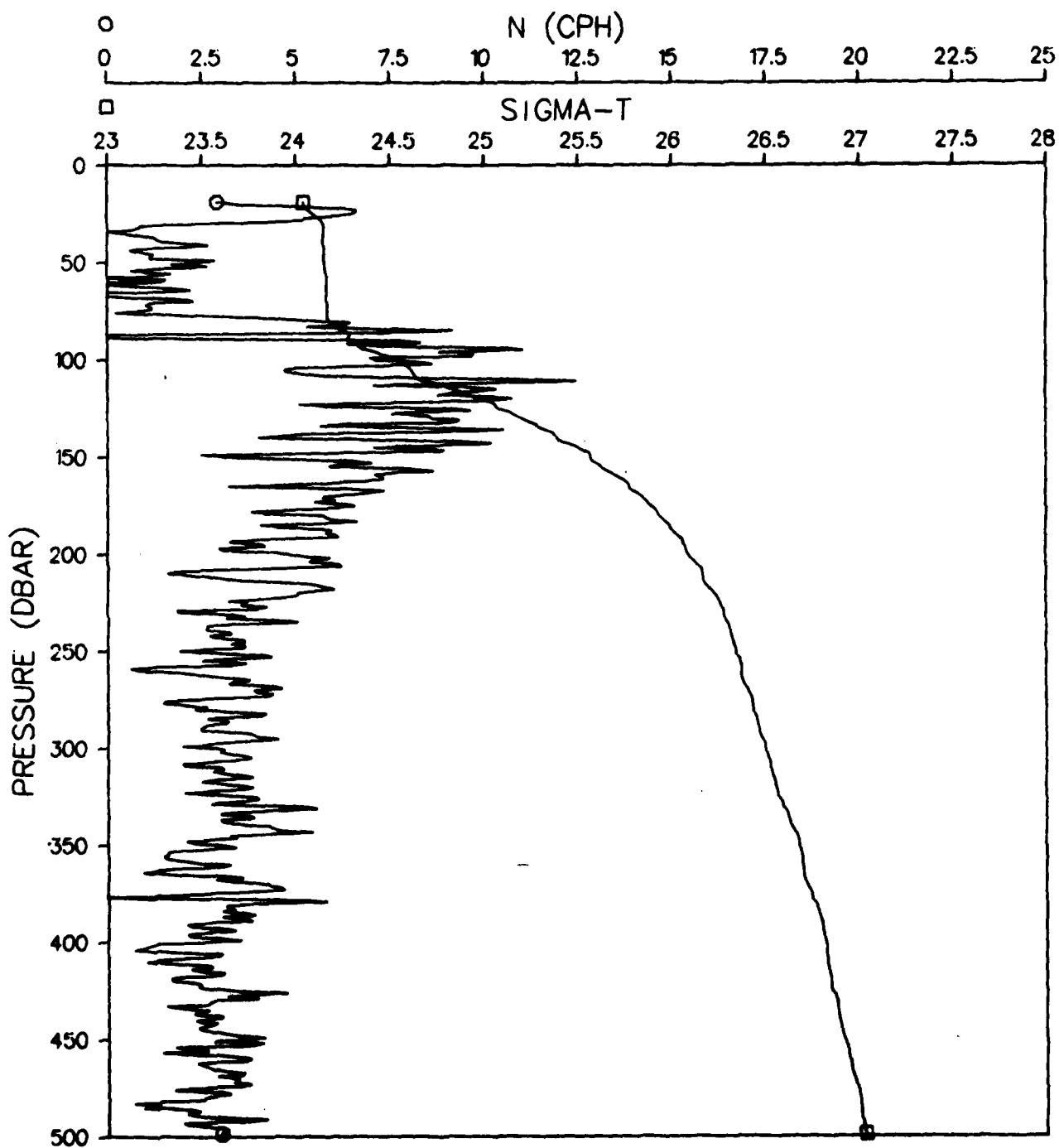


Figure 412.

ATOM 79 RECOVERY
STATION 200004

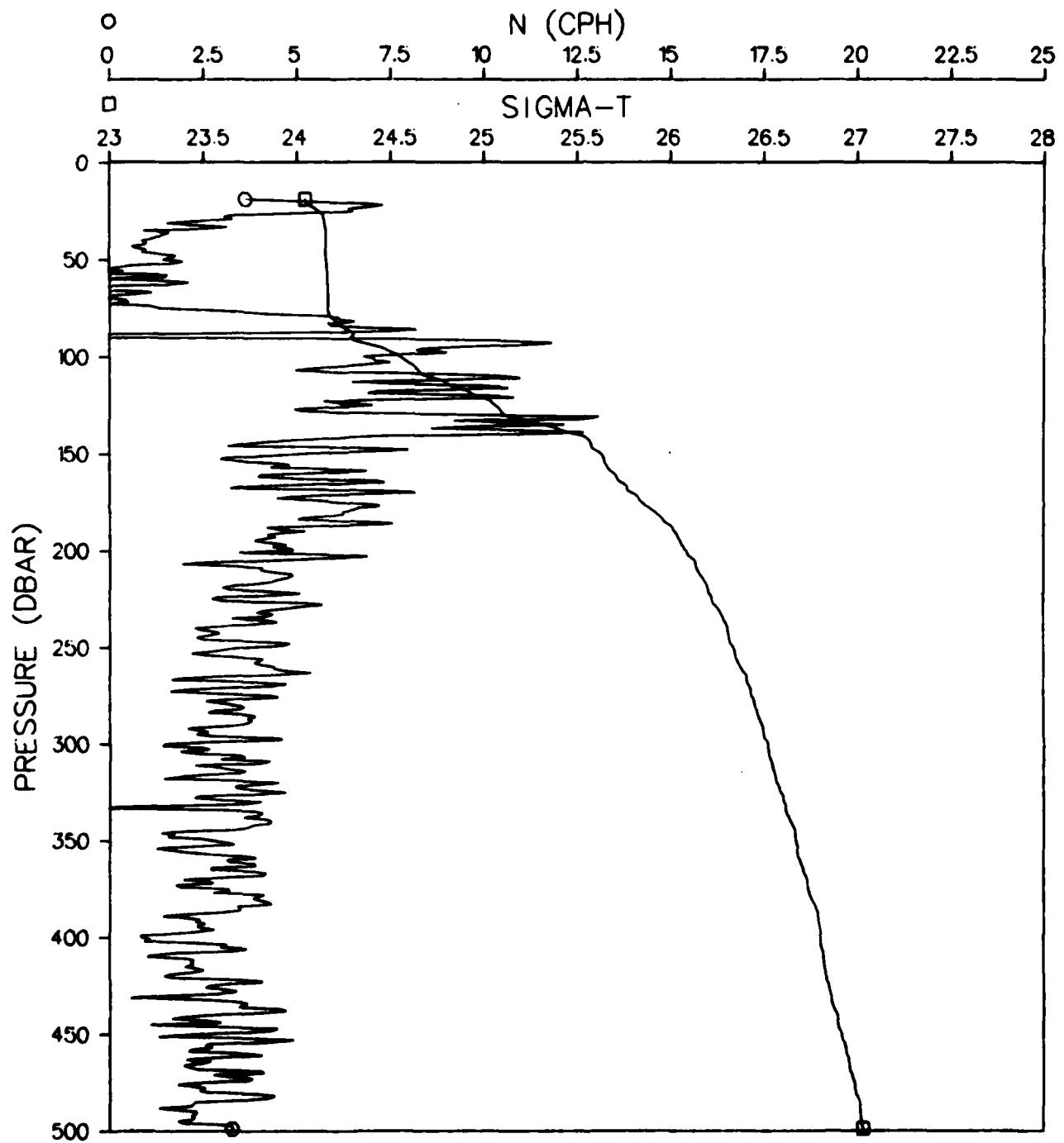


Figure 413.

ATOM 79 RECOVERY
STATION 200005

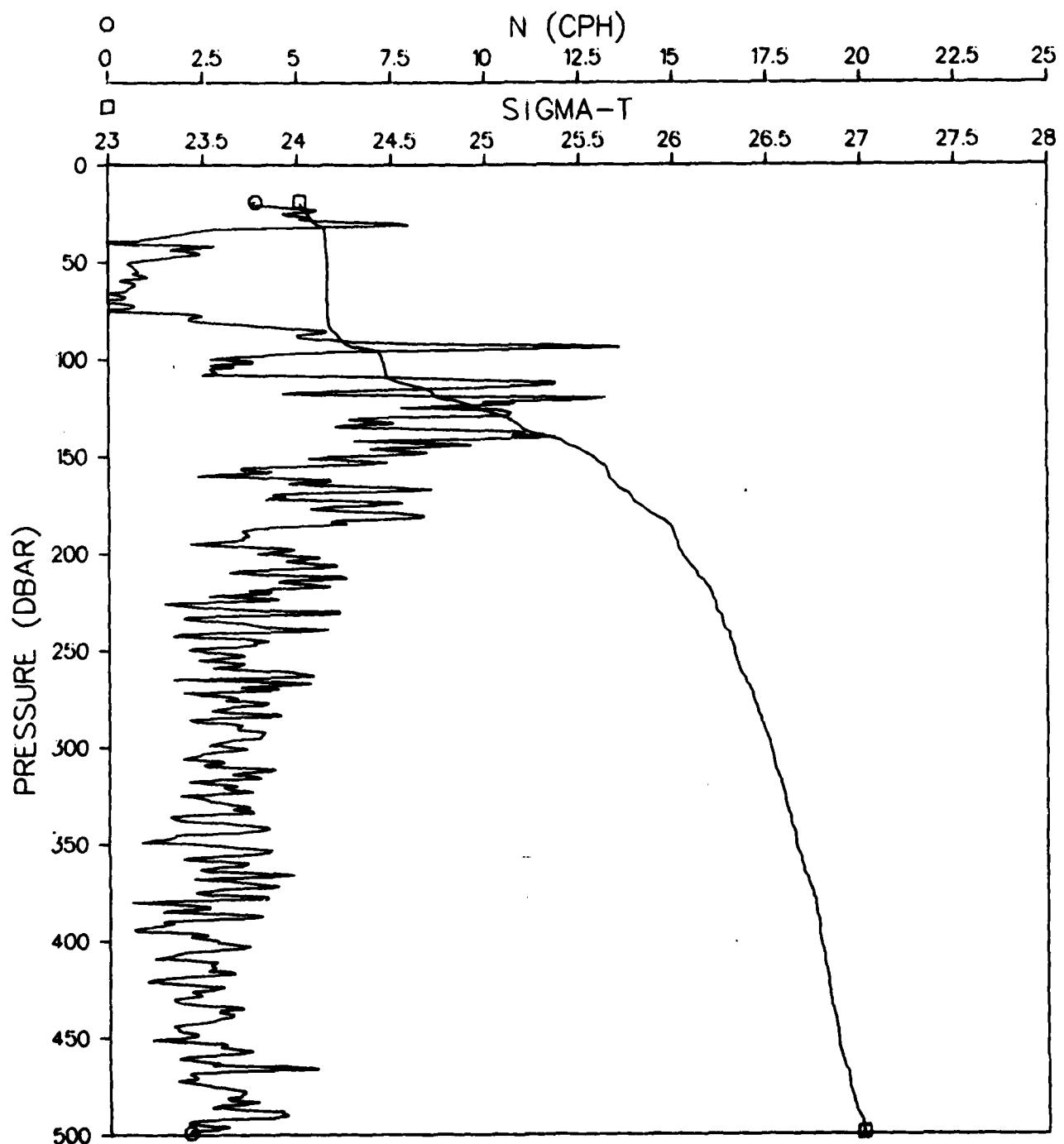


Figure 414.

ATOM 79 RECOVERY
STATION 200006

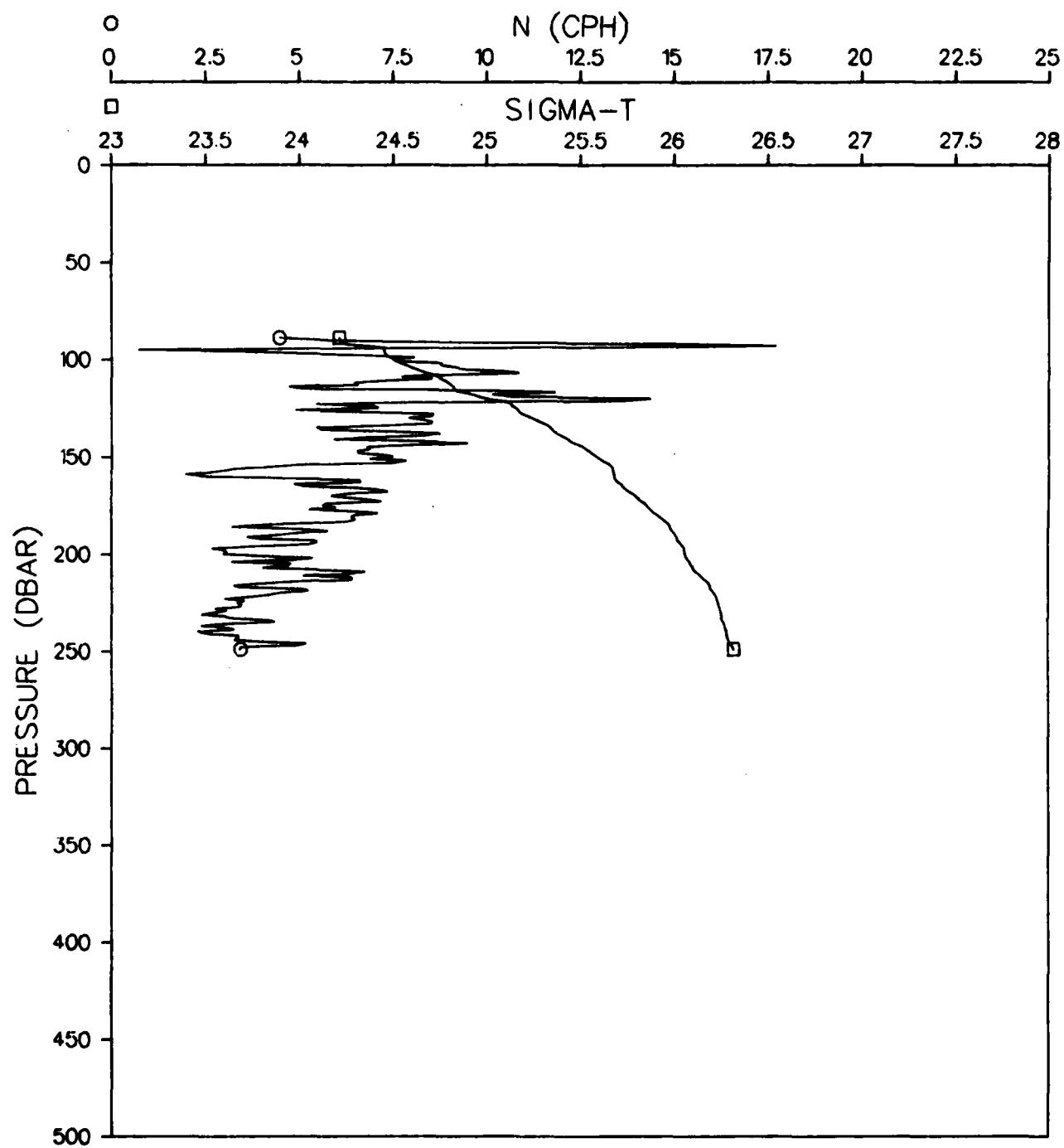


Figure 415.

ATOM 79 RECOVERY
STATION 200007

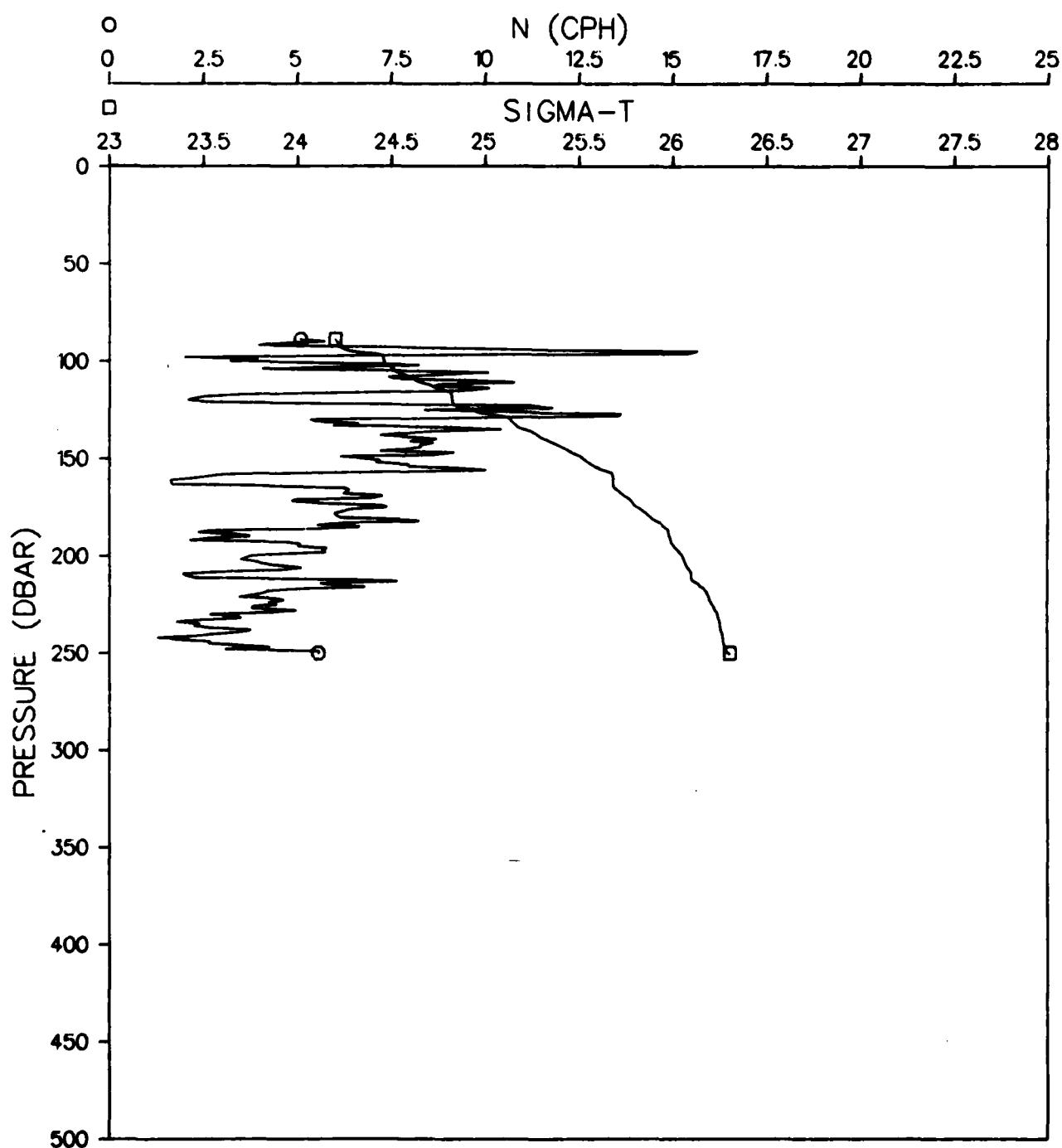


Figure 416.

ATOM 79 RECOVERY
STATION 200008

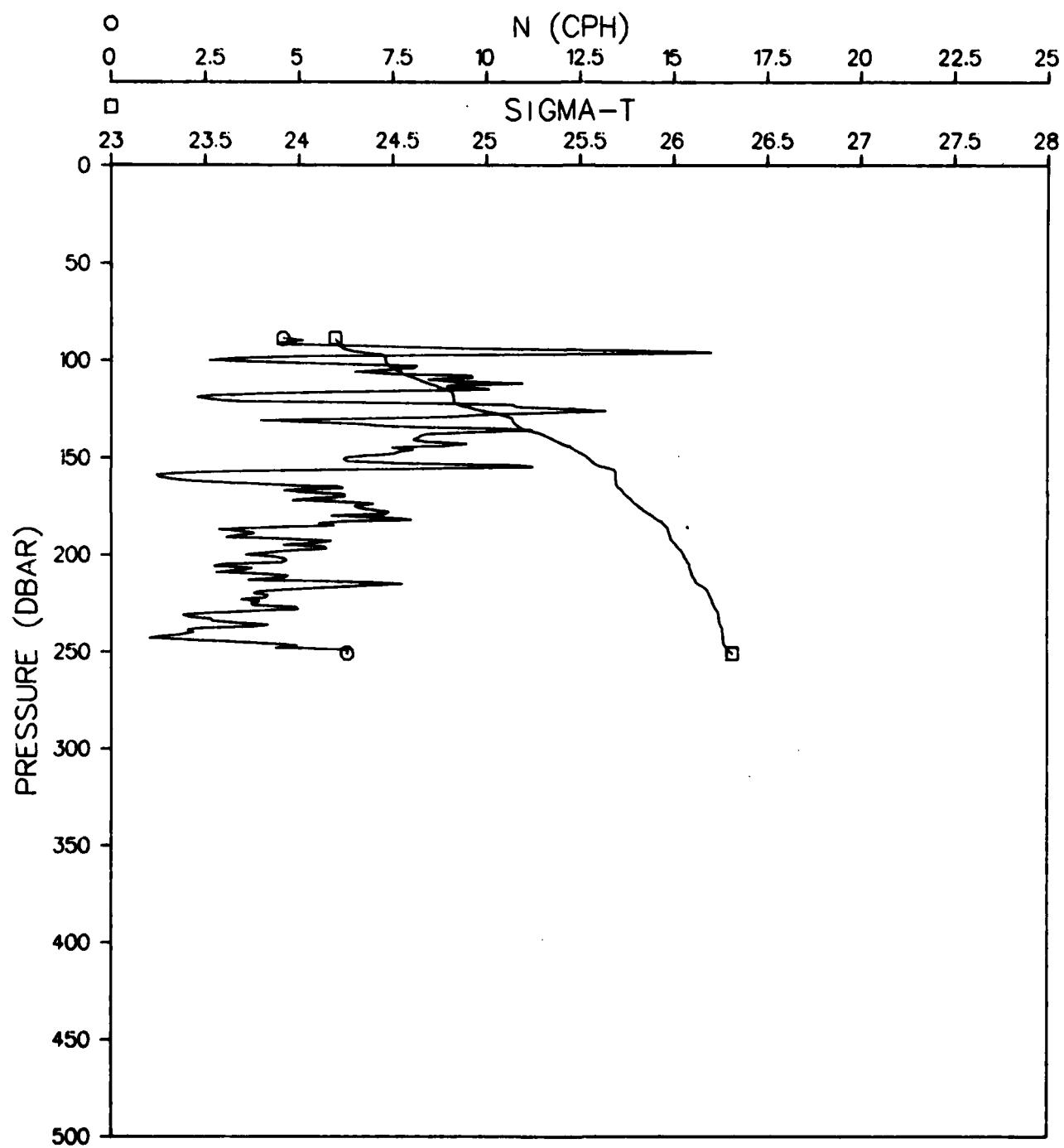


Figure 417.

ATOM 79 RECOVERY
STATION 200009

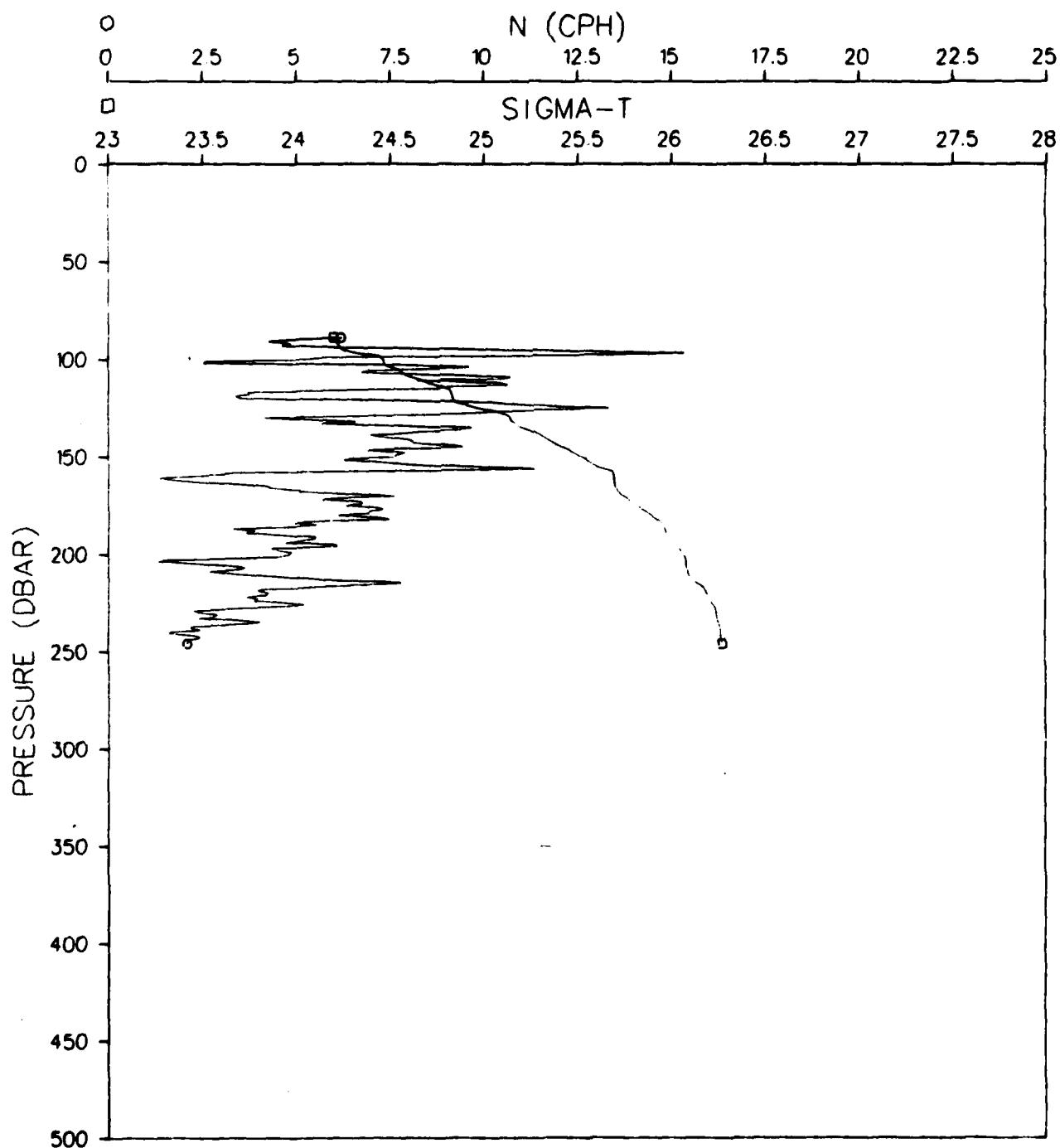


Figure 418.

ATOM 79 RECOVERY
STATION 200010

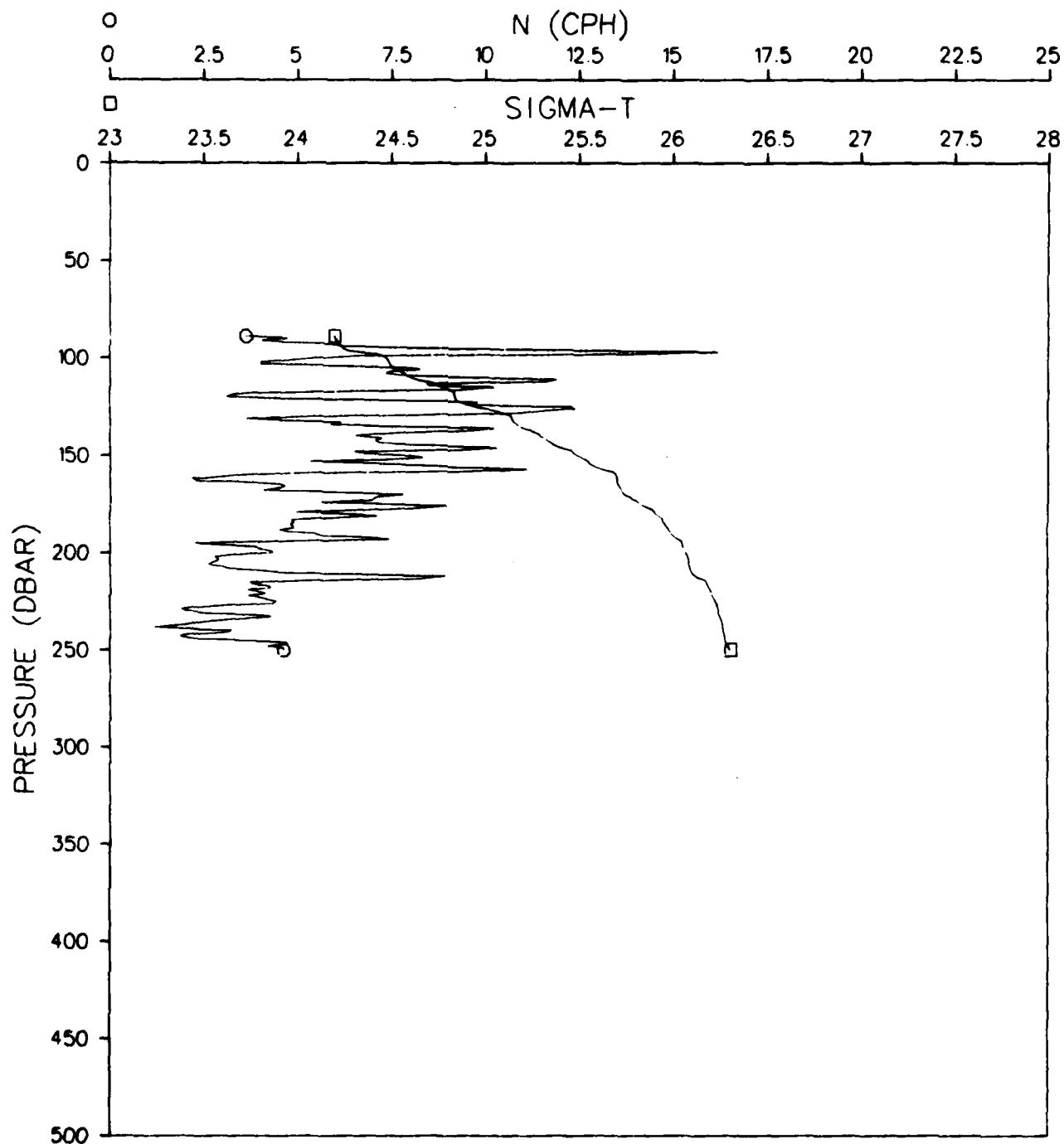


Figure 419.

ATOM 79 RECOVERY
STATION 200012

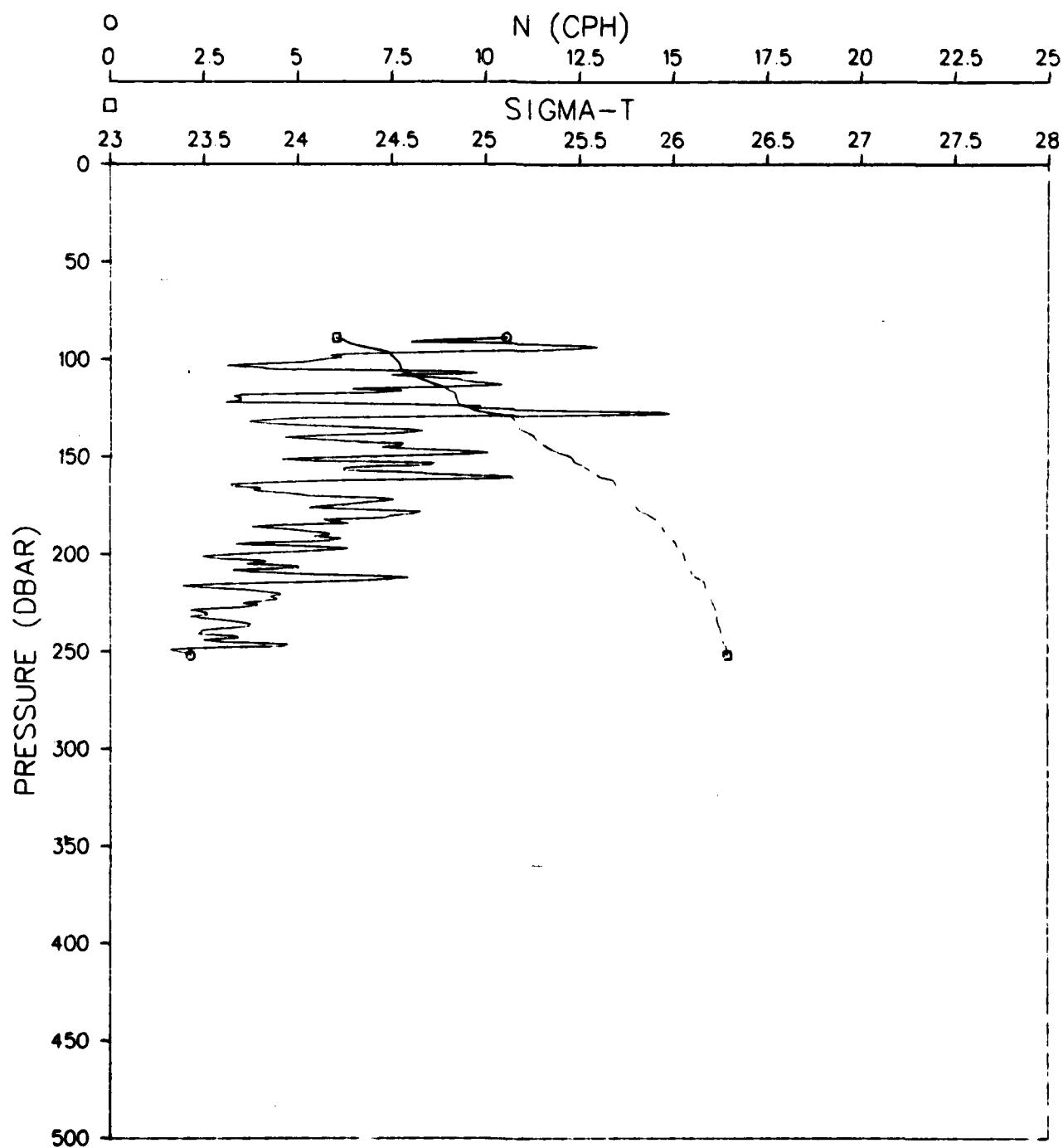


Figure 420.

ATOM 79 RECOVERY
STATION 200013

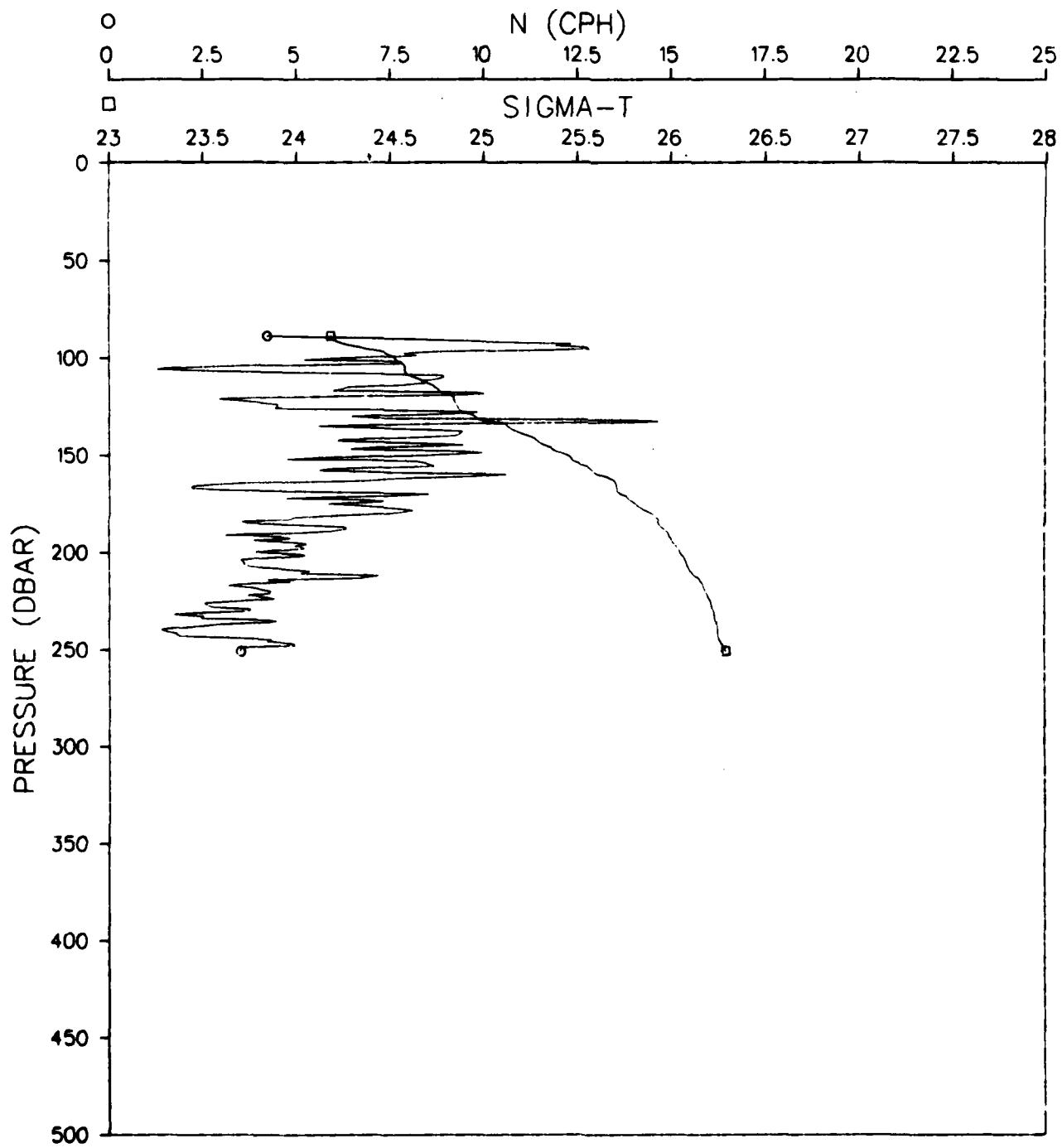


Figure 421.

ATOM 79 RECOVERY
STATION 200014

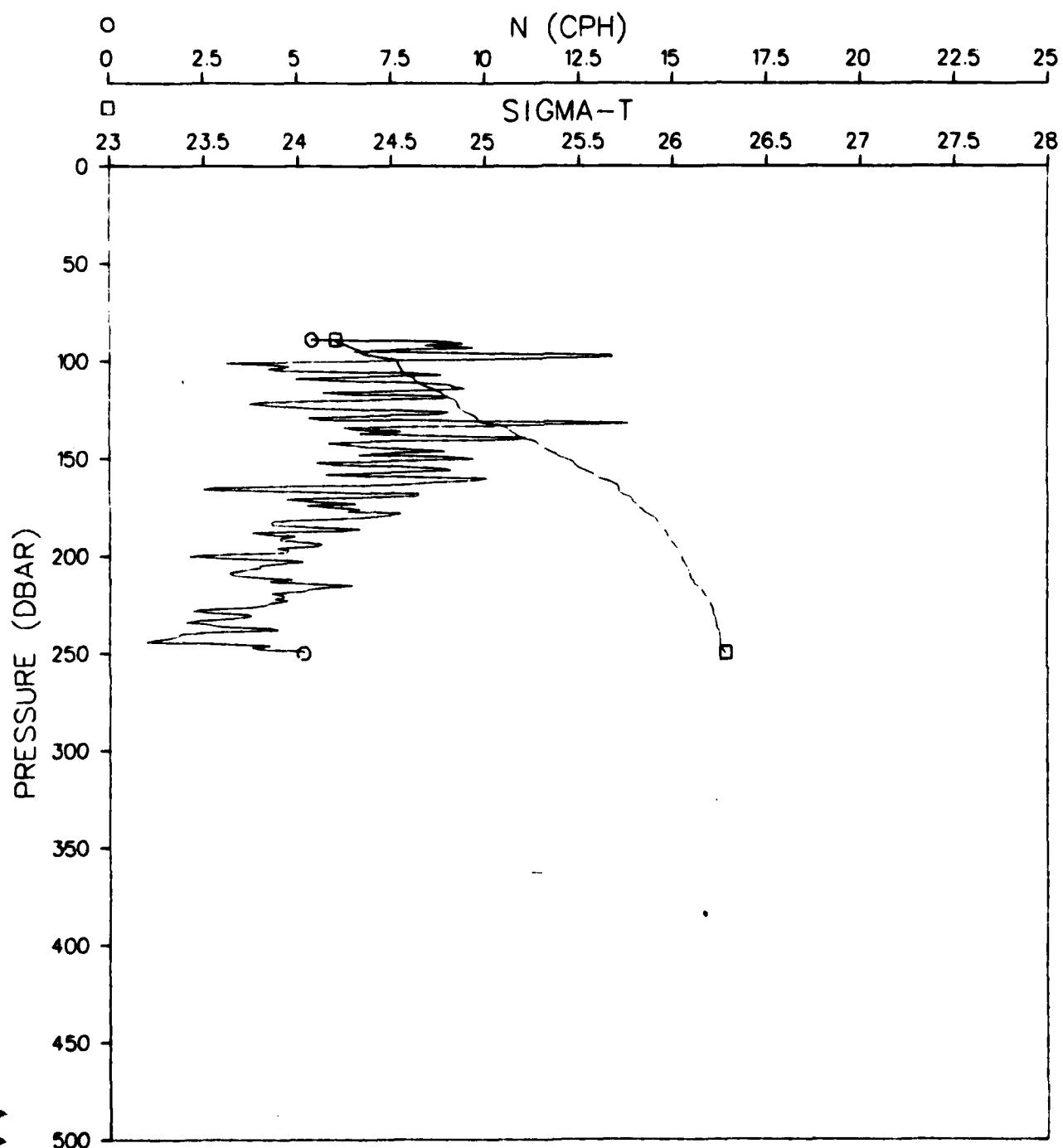


Figure 422.

ATOM 79 RECOVERY
STATION 200015

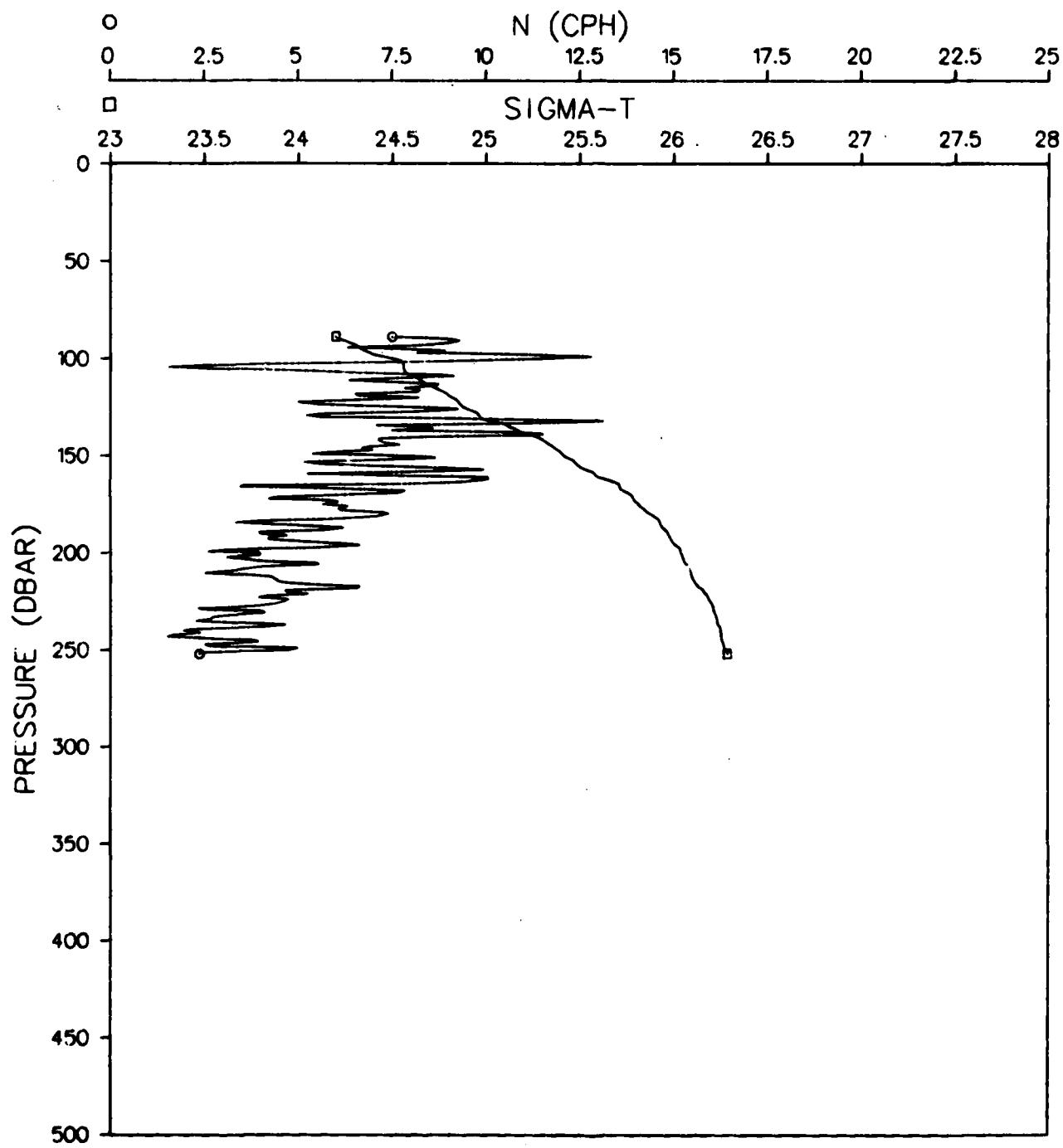


Figure 423.

ATOM 79 RECOVERY
STATION 200016

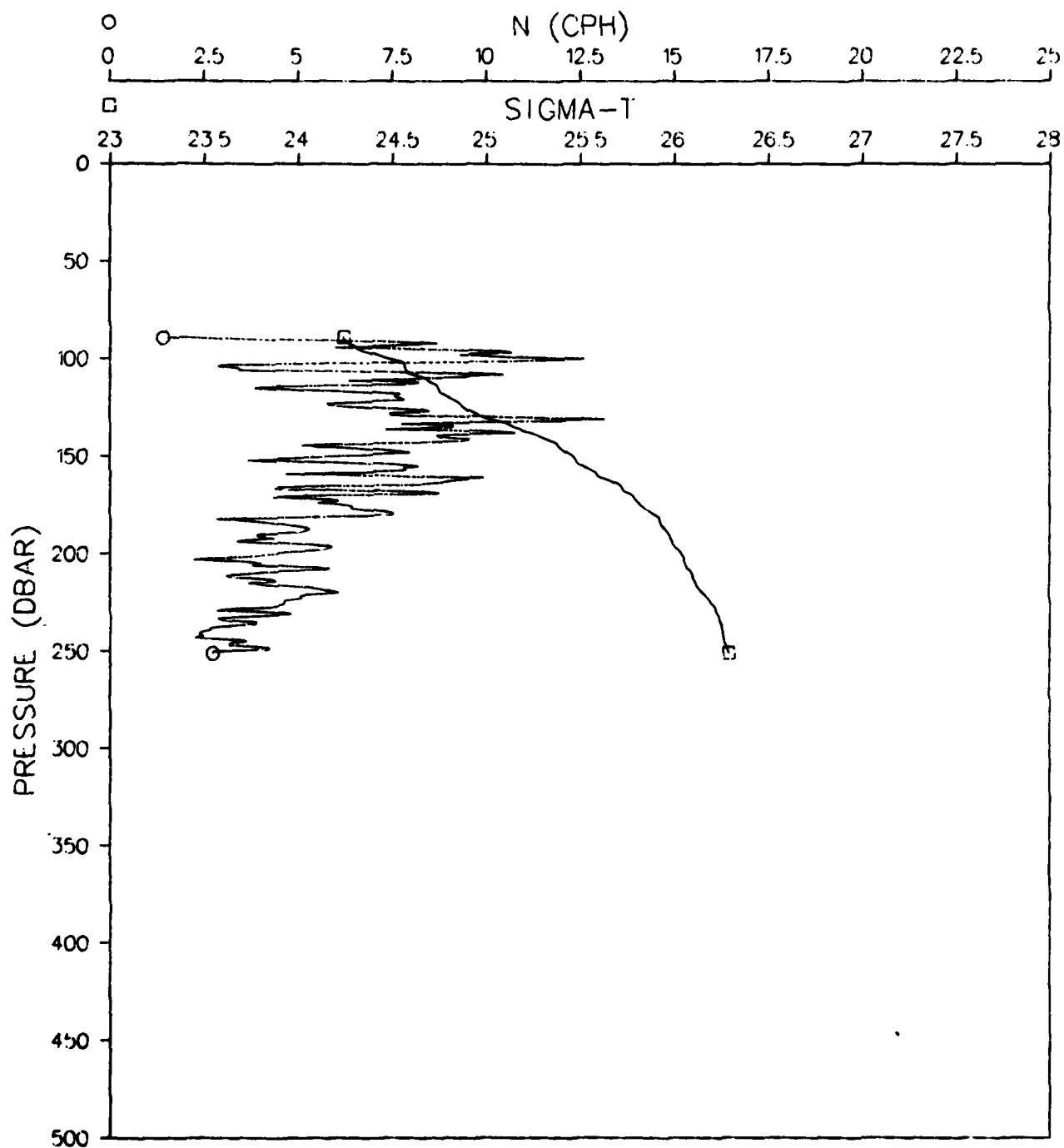


Figure 424.

ATOM 79 RECOVERY
STATION 200017

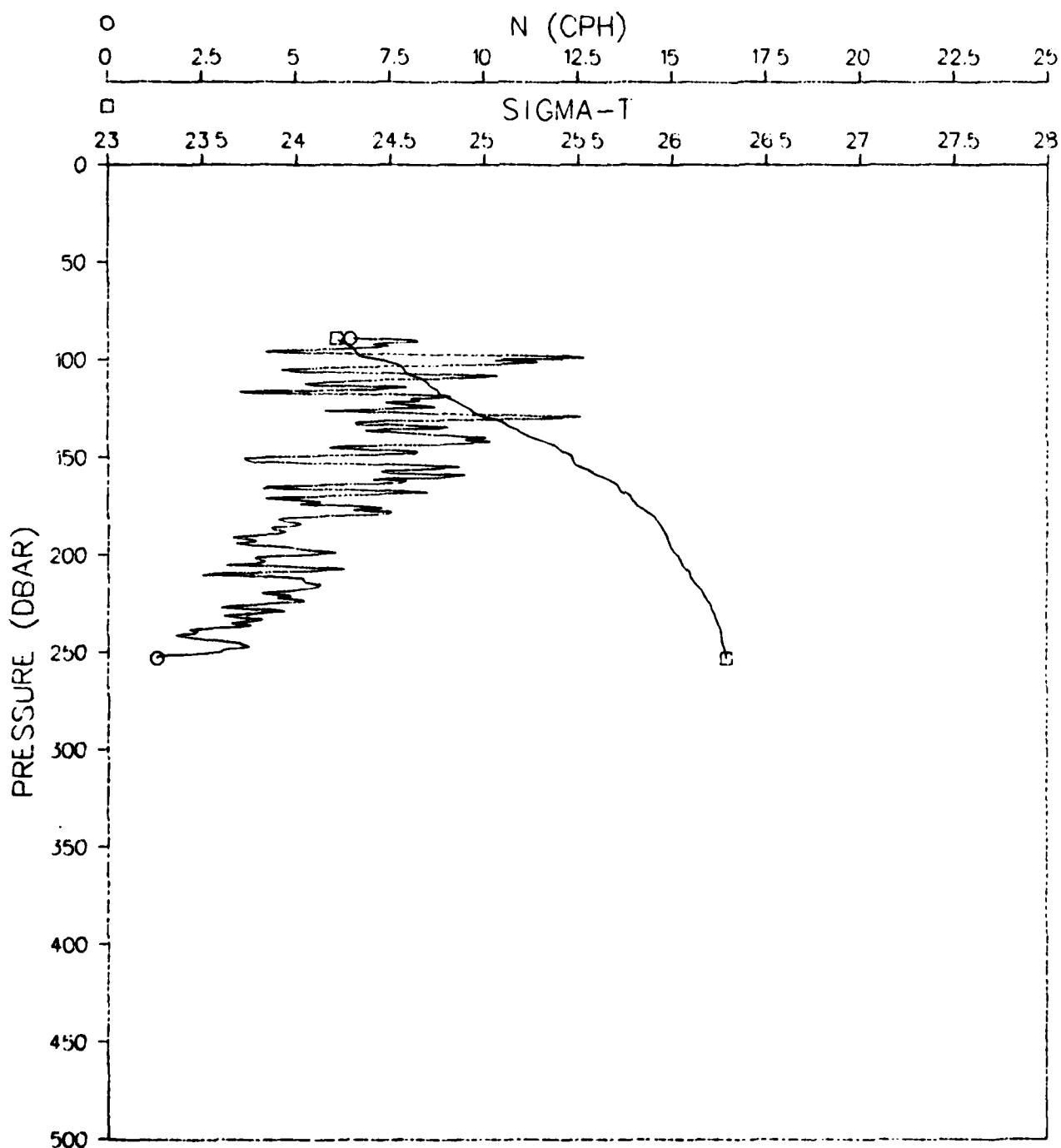


Figure 425.

ATOM 79 RECOVERY
STATION 200018

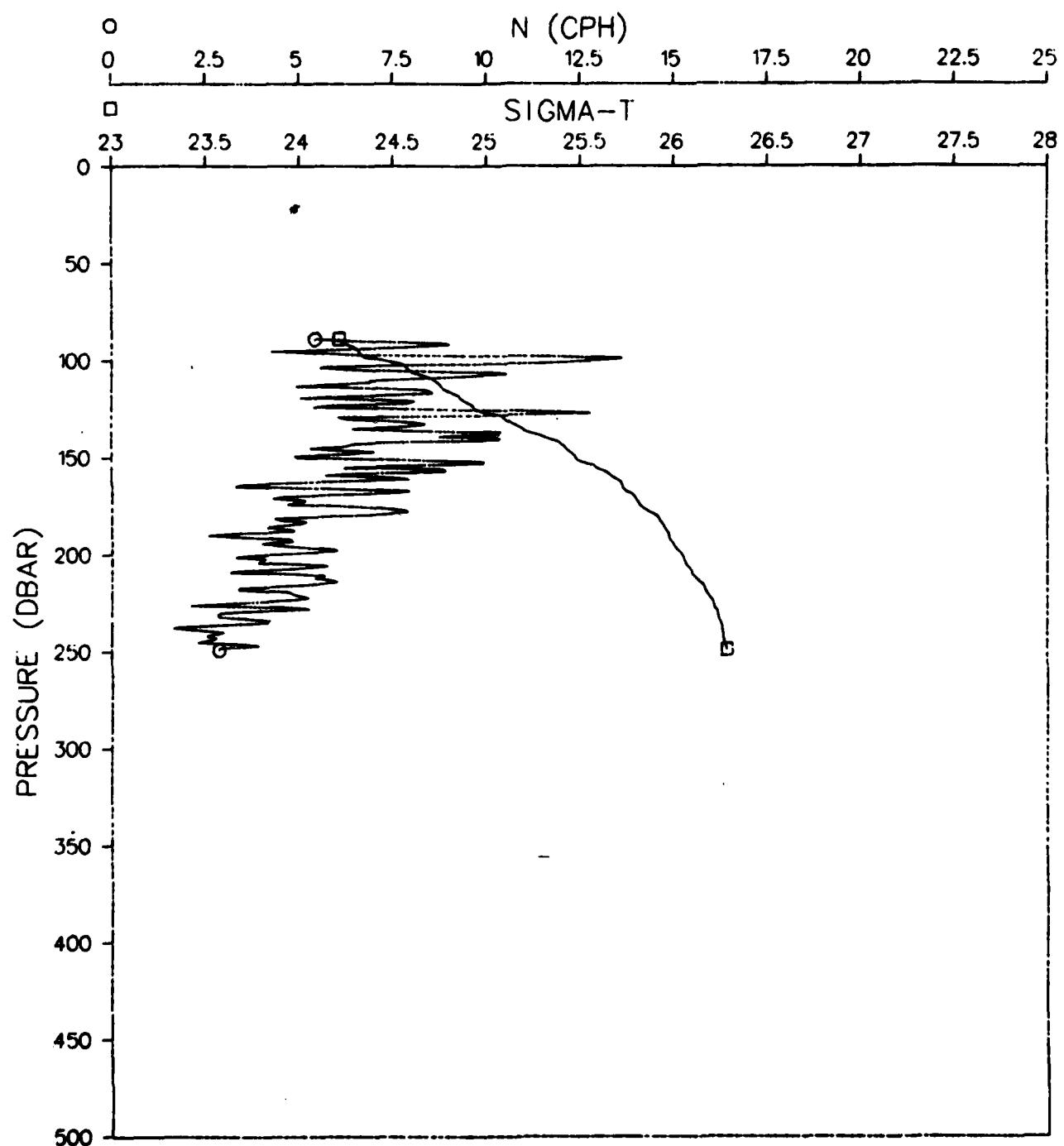


Figure 426.

ATOM 79 RECOVERY
STATION 200019

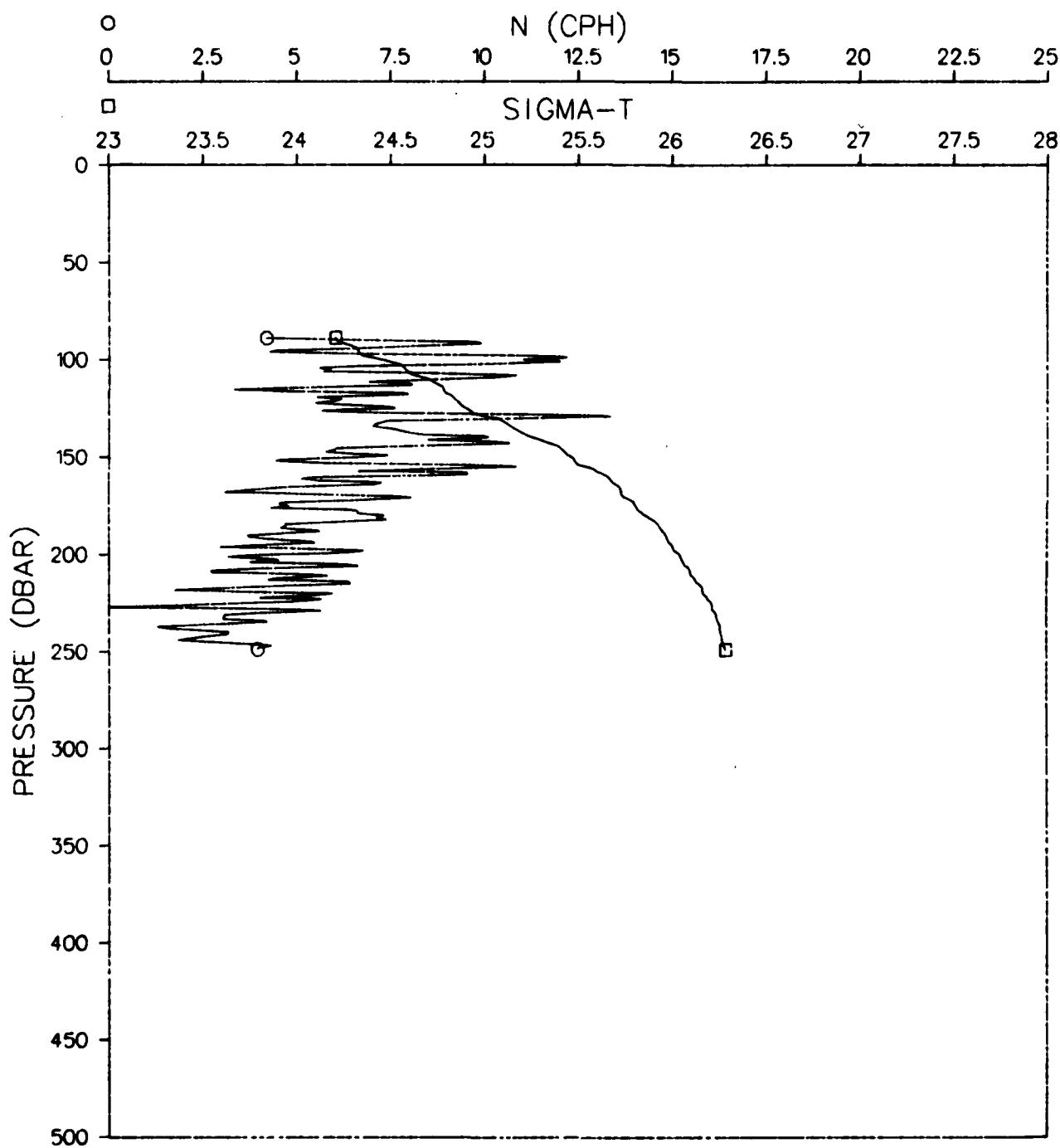


Figure 427.

ATOM 79 RECOVERY
STATION 200020

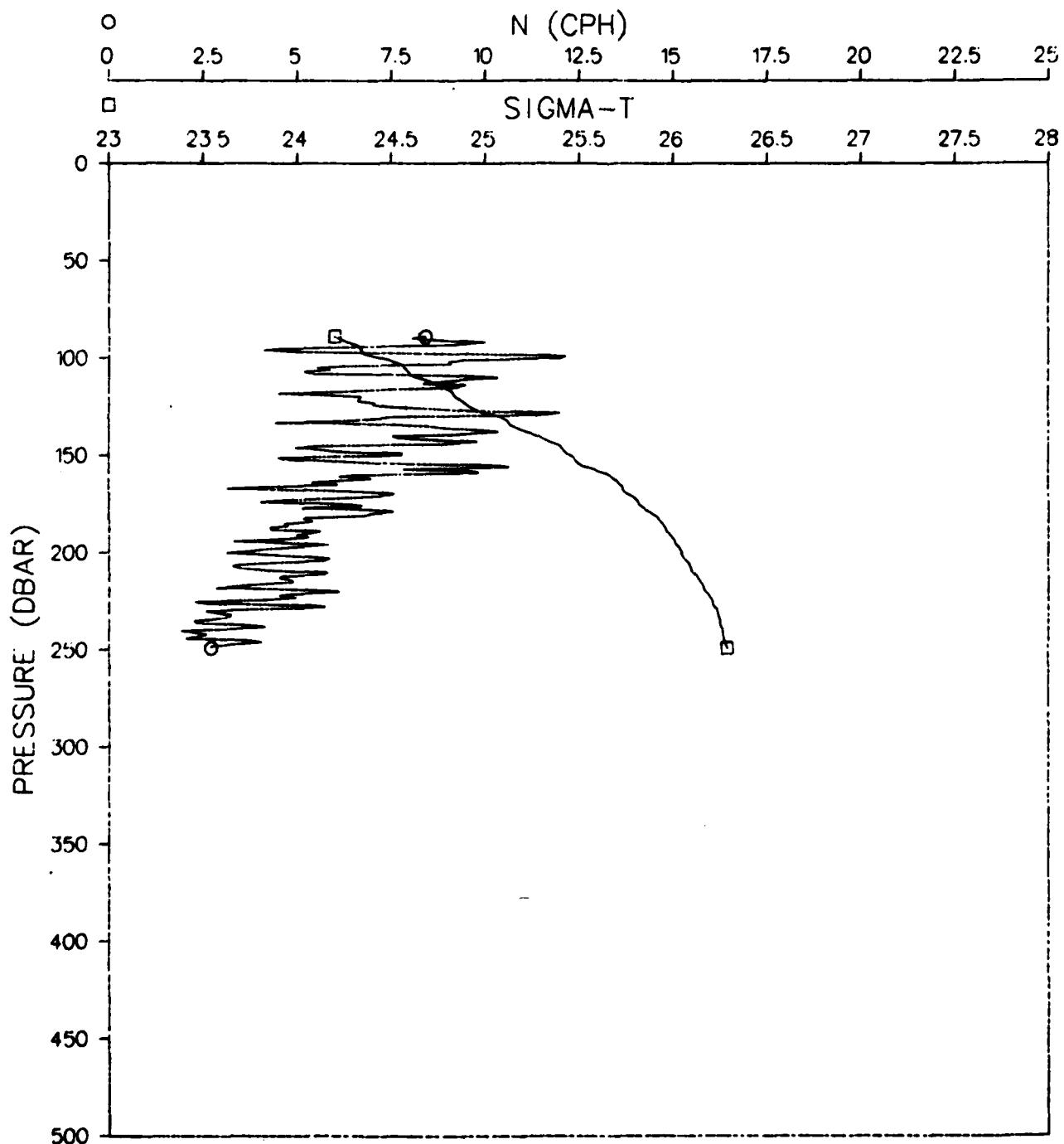


Figure 428.

ATOM 79 RECOVERY
STATION 200021

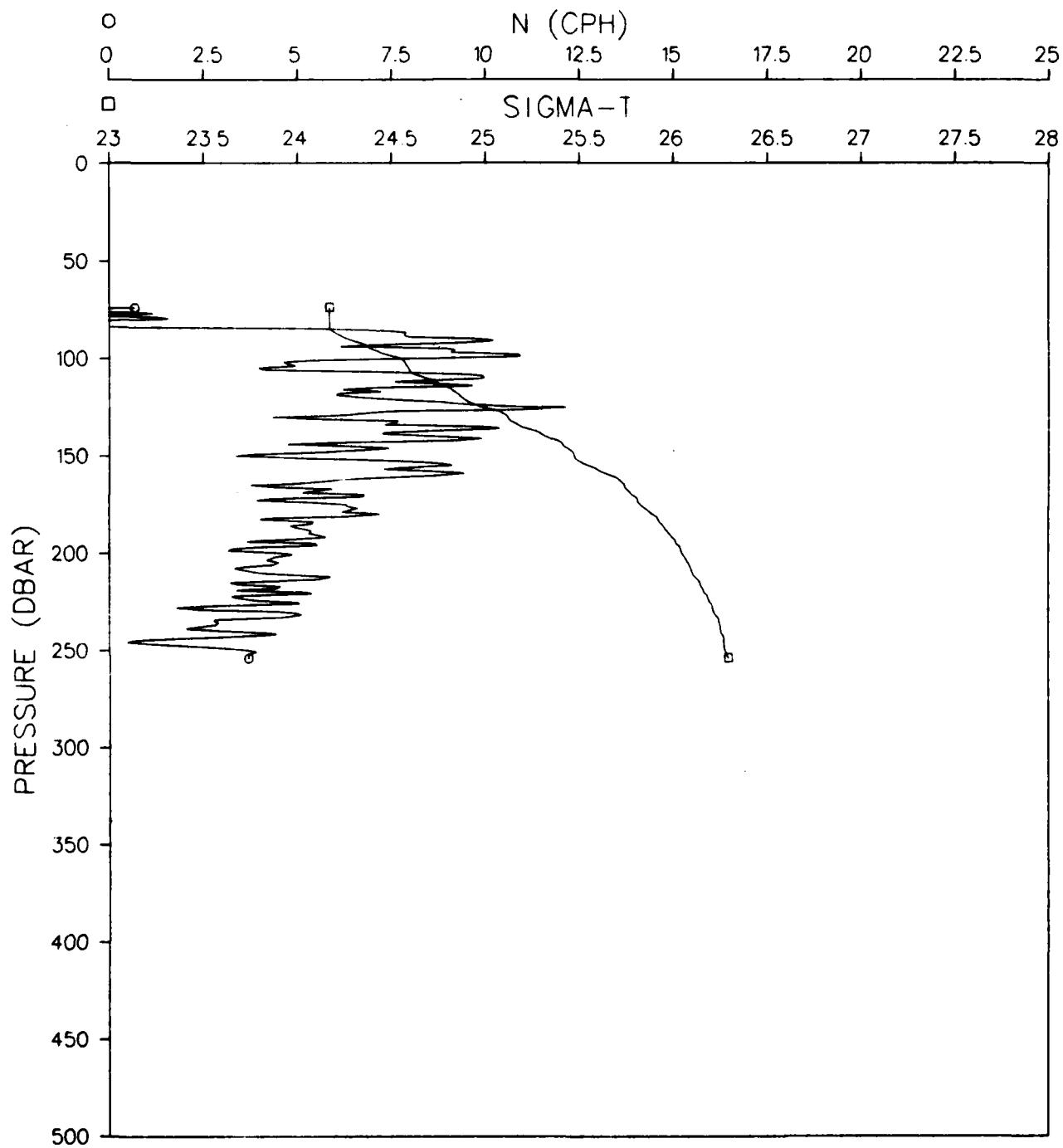


Figure 429.

ATOM 79 RECOVERY
STATION 200022

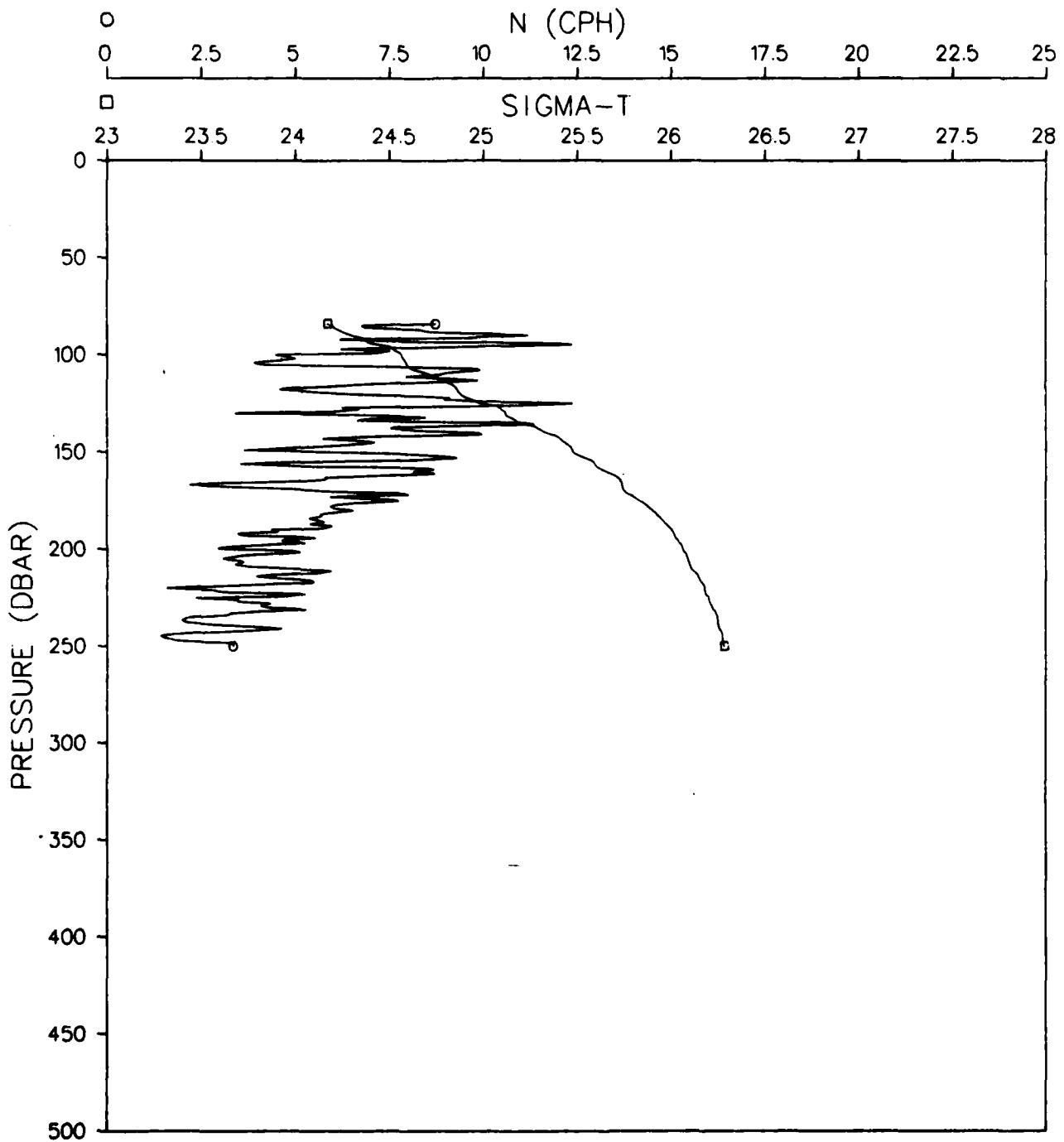


Figure 430.

ATOM 79 RECOVERY
STATION 200023

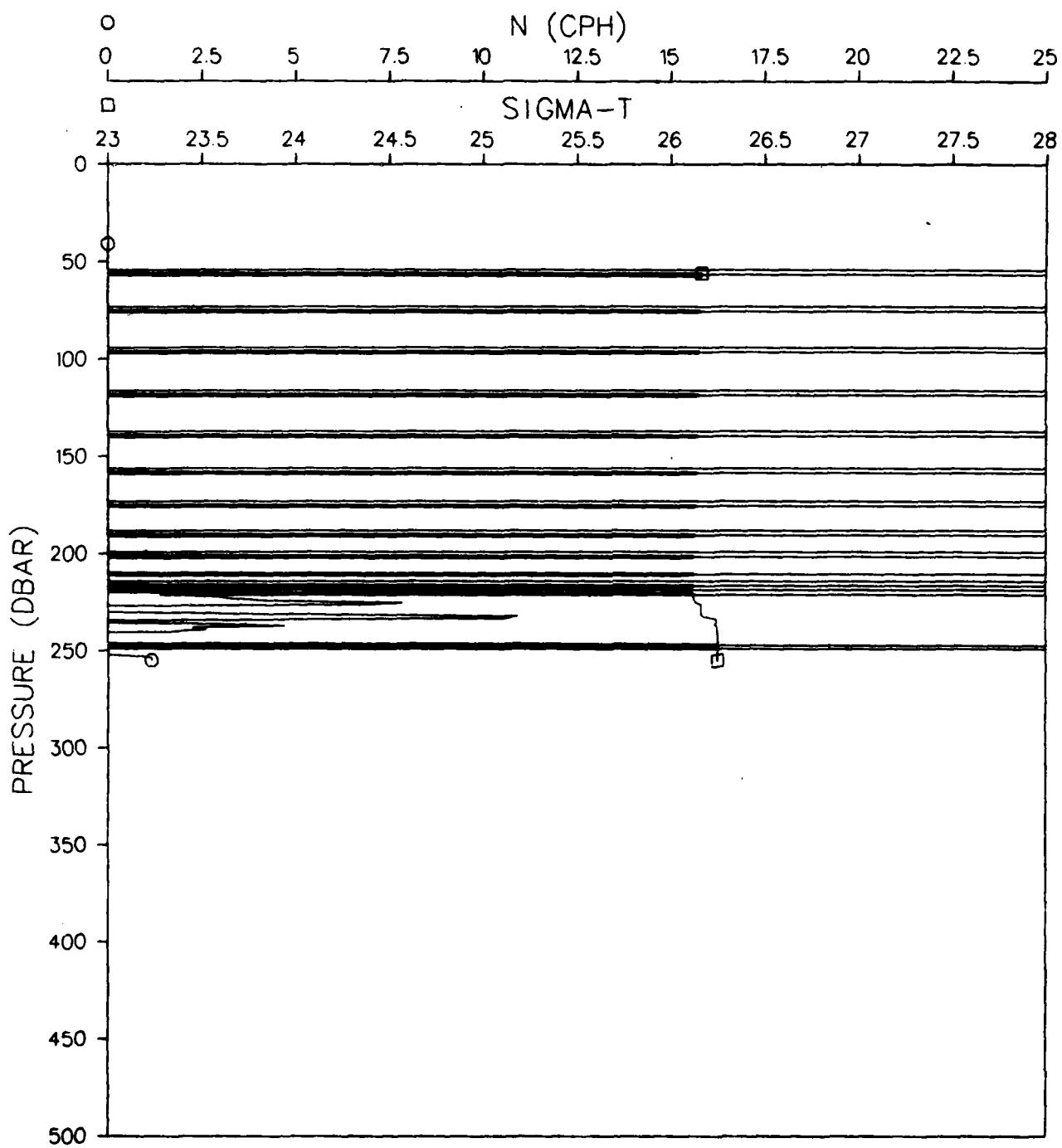


Figure 431.

ATOM 79 RECOVERY
STATION 200024

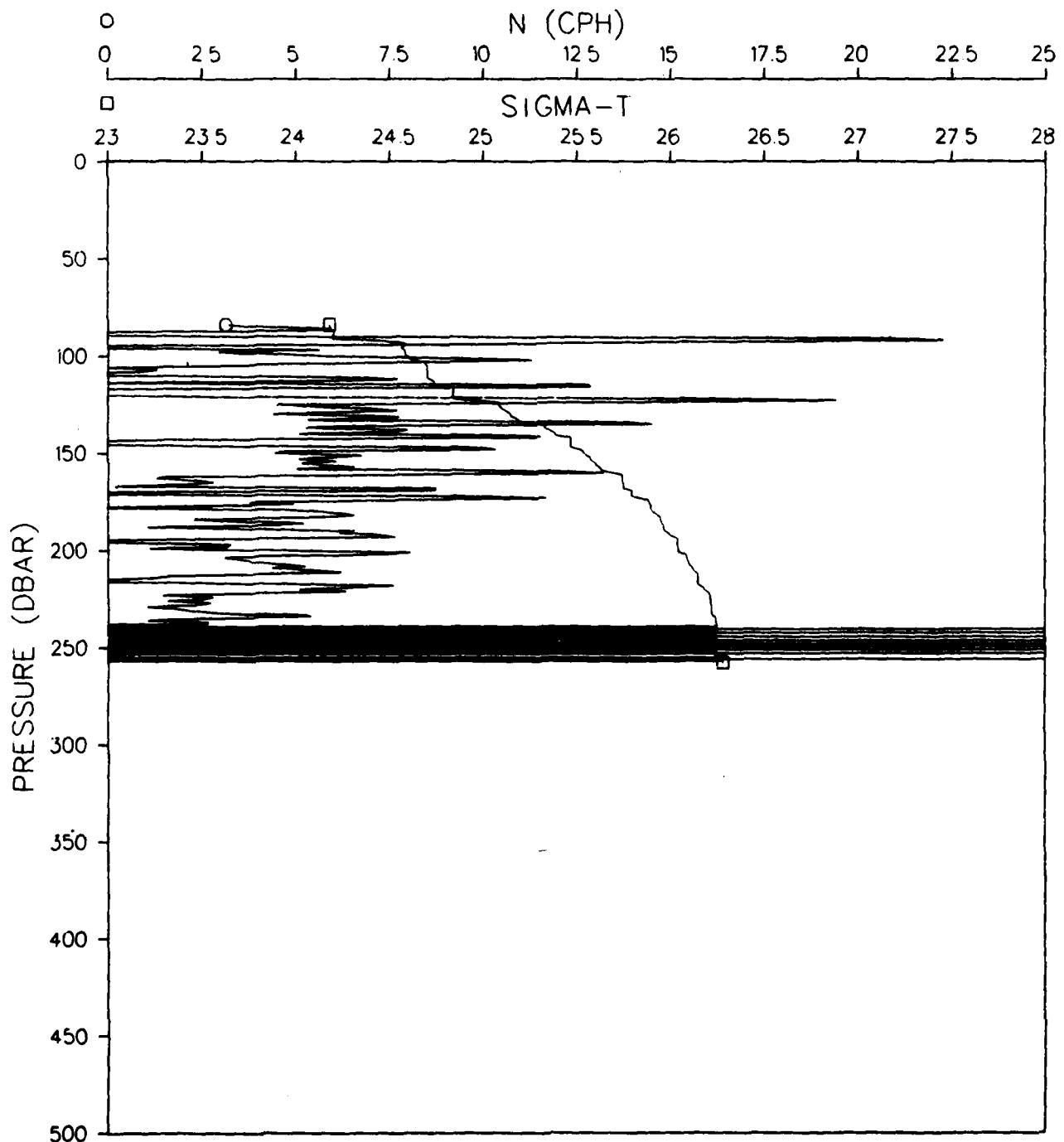


Figure 432.

ATOM 79 RECOVERY
STATION 200025

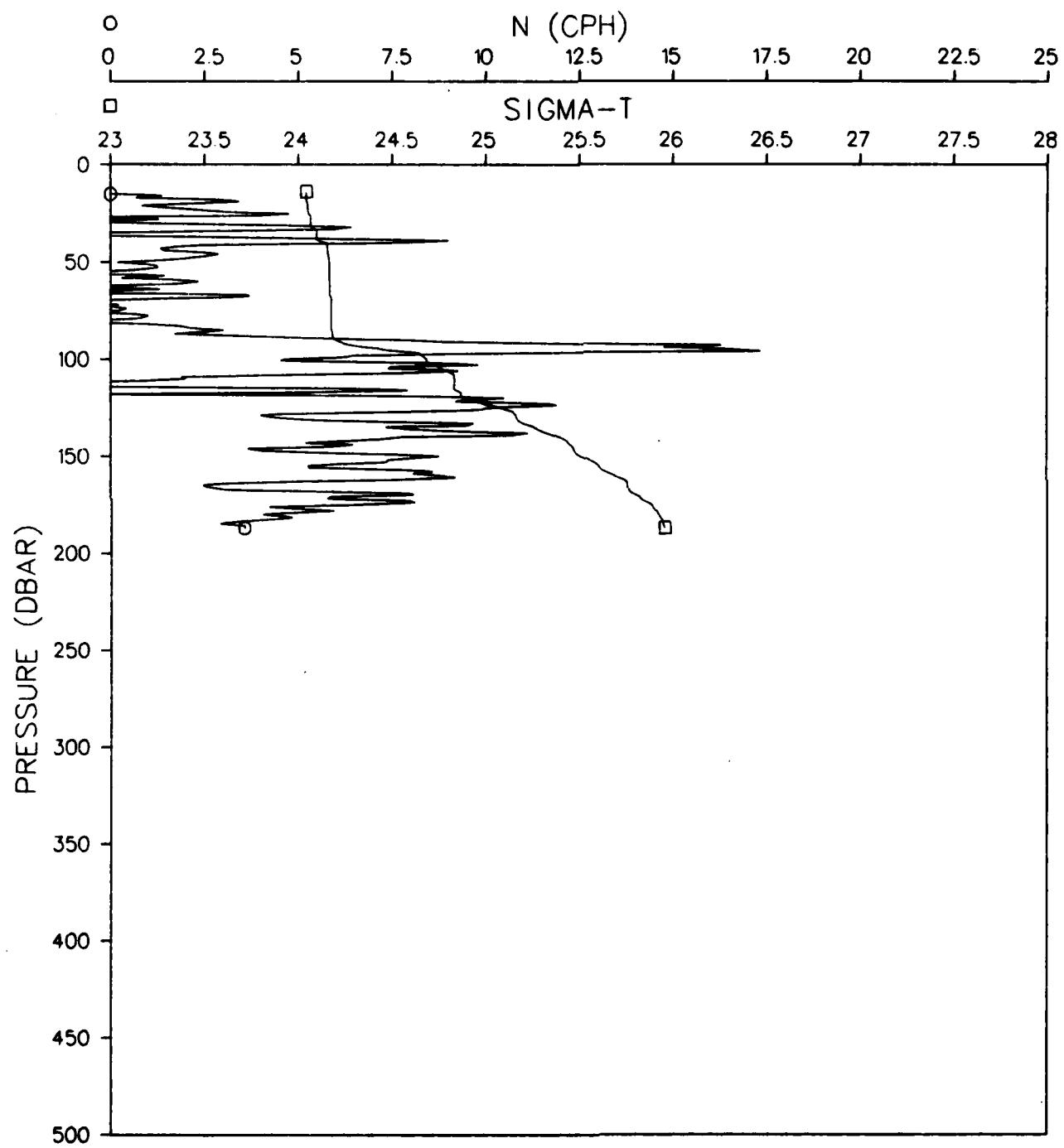


Figure 433.

ATOM 79 RECOVERY
STATION 200026

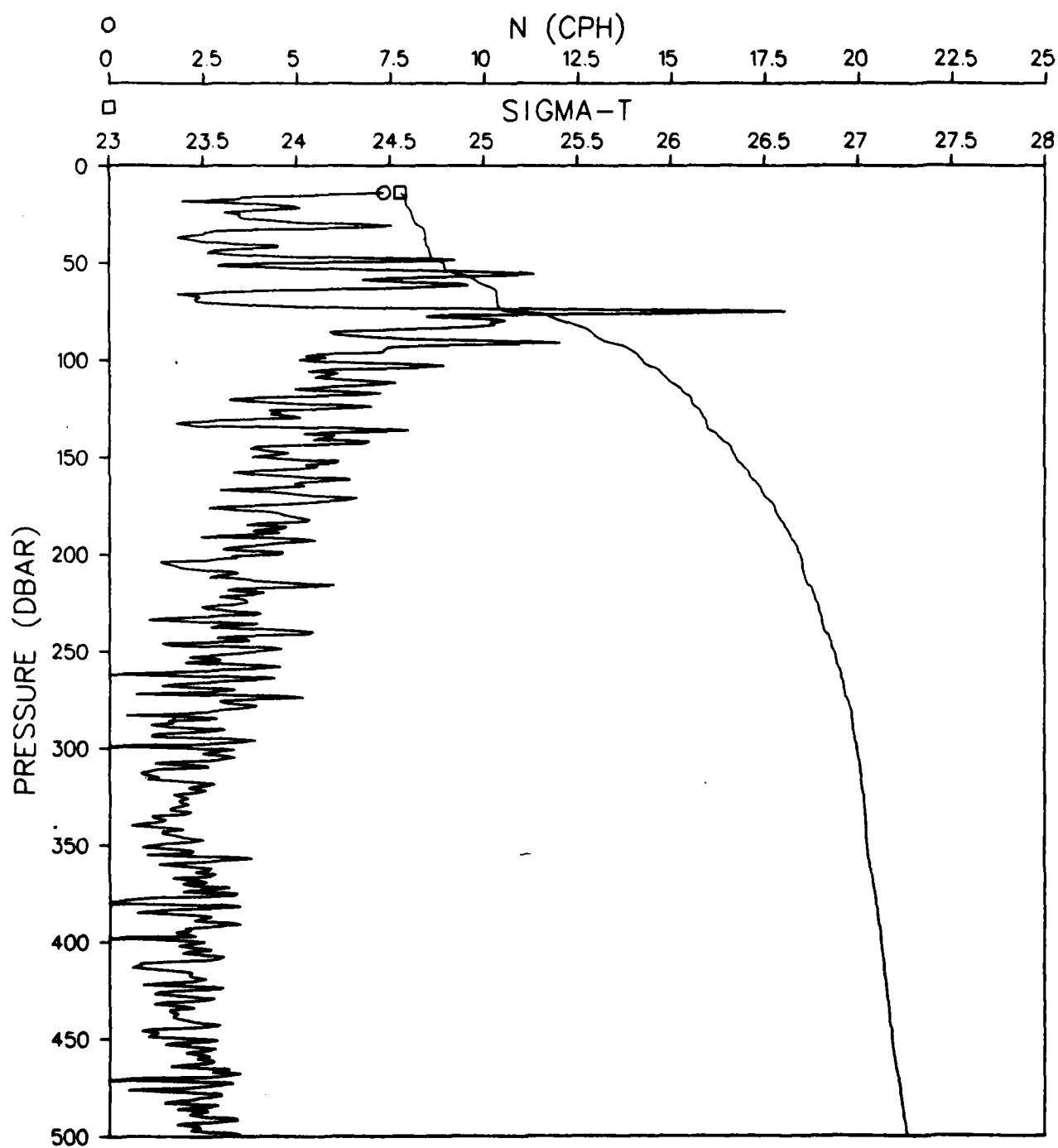


Figure 434.

ATOM 79 RECOVERY
STATION 200027

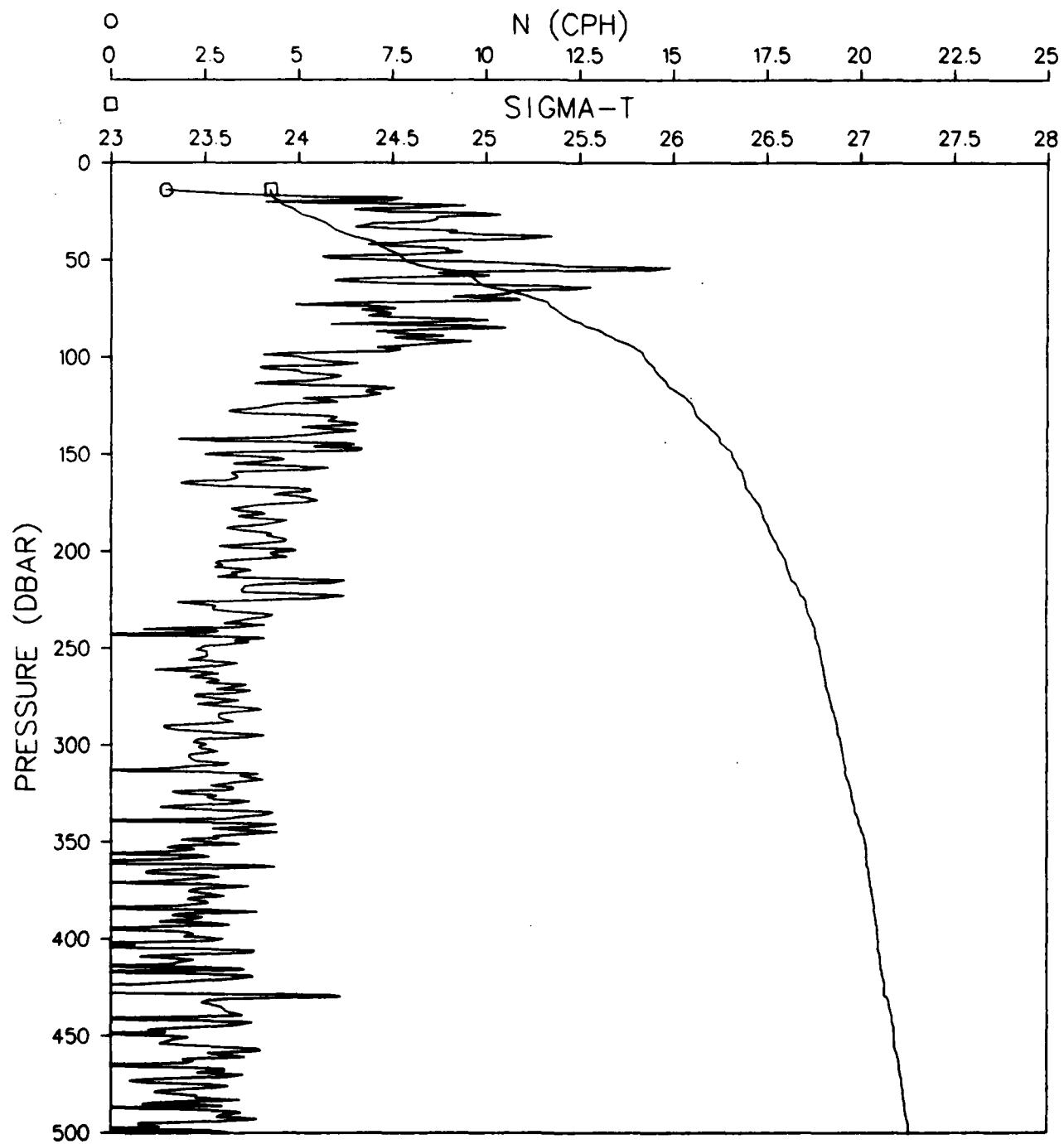


Figure 435.

ATOM 79 RECOVERY
STATION 200028

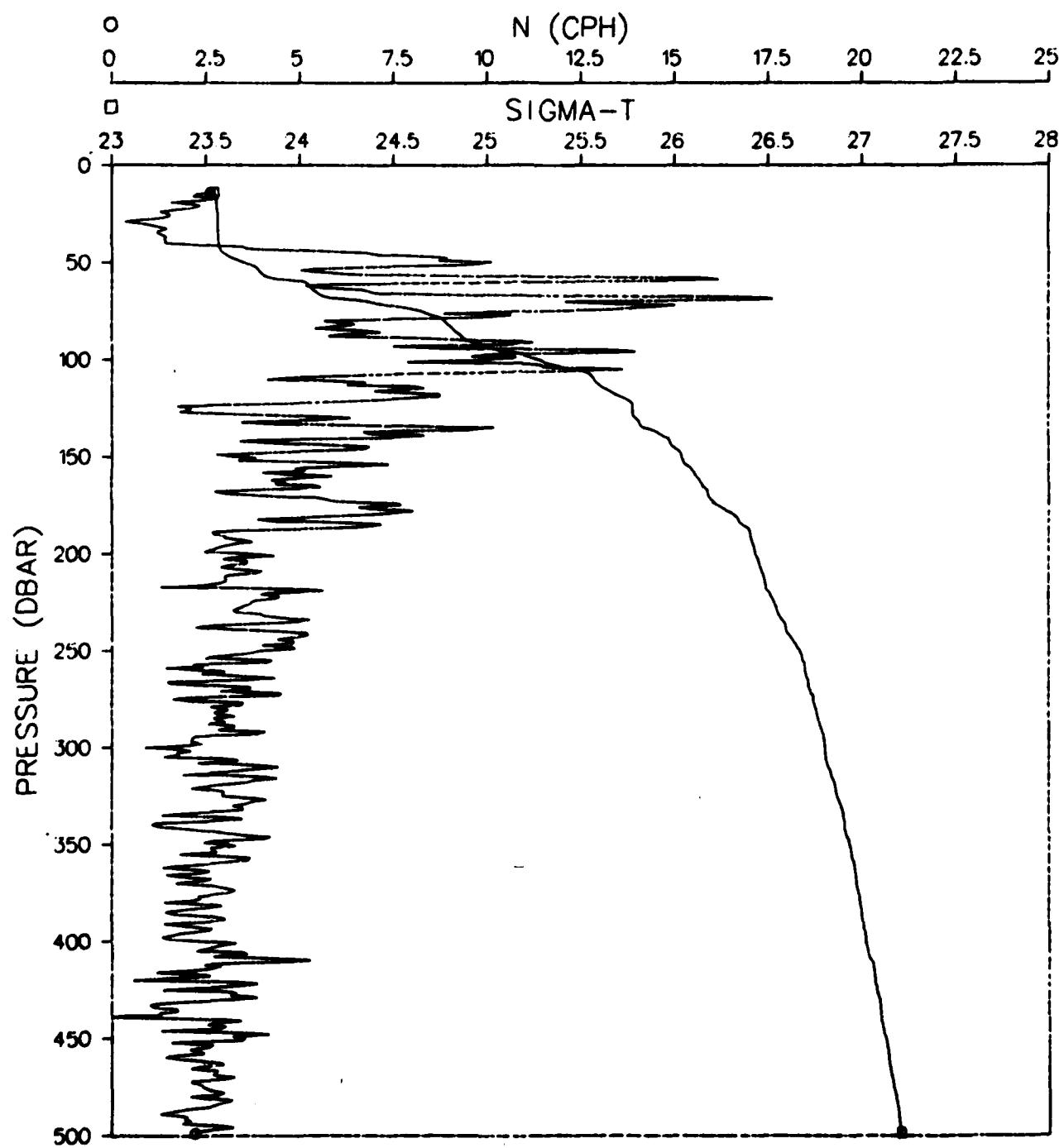


Figure 436.

ATOM 79 RECOVERY
STATION 200029

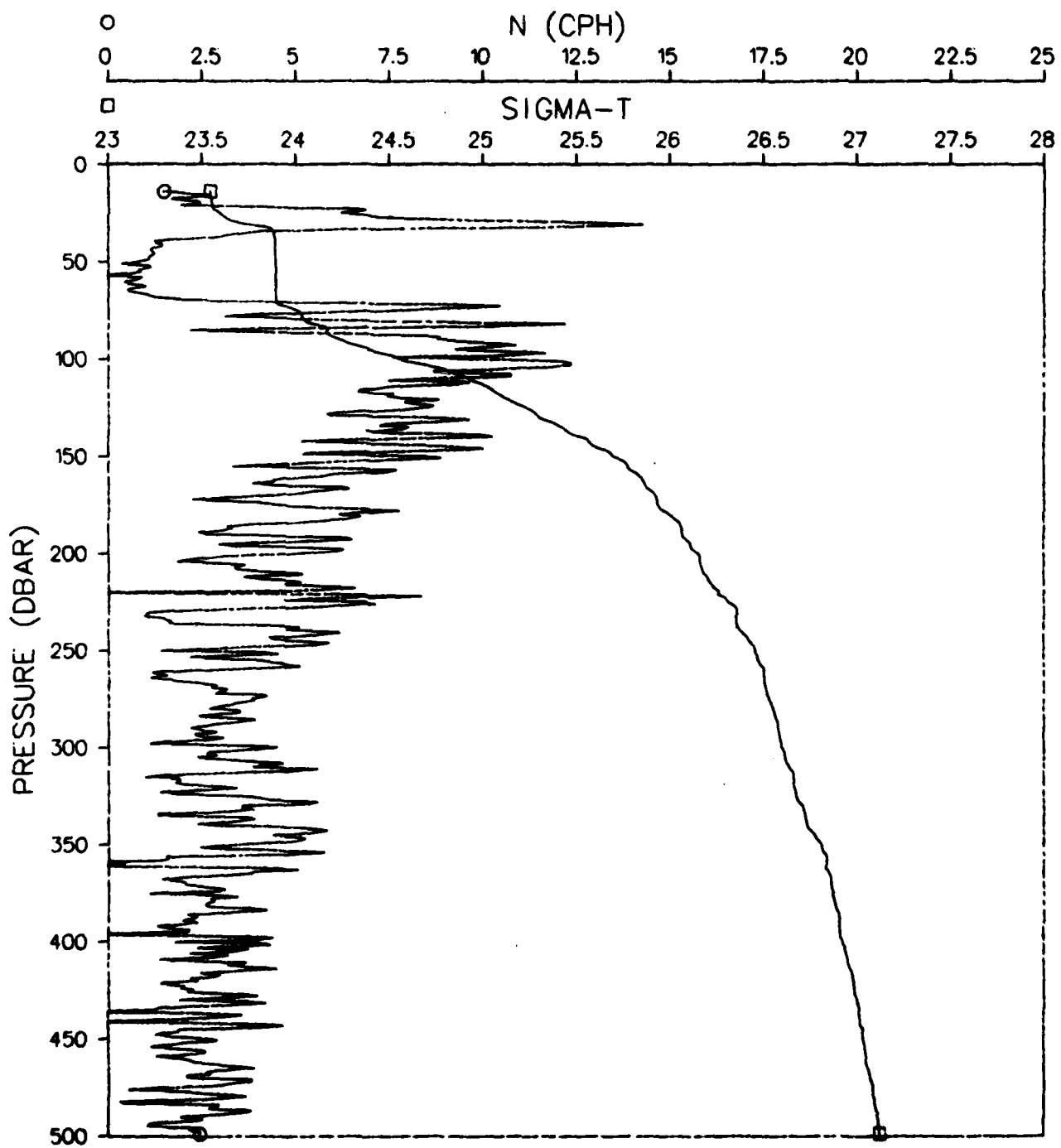


Figure 437.

ATOM 79 RECOVERY
STATION 200030

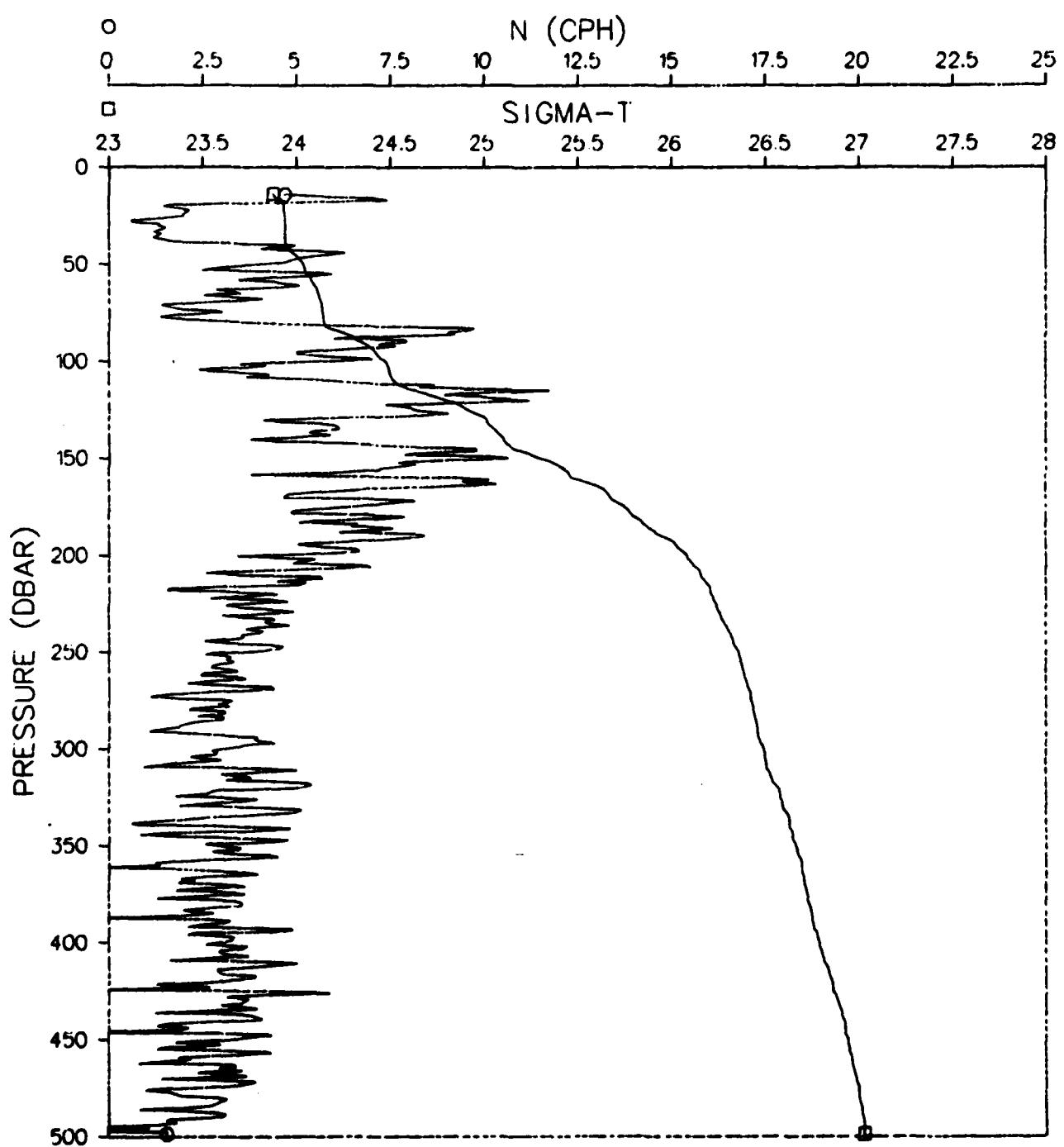


Figure 438.

ATOM 79 RECOVERY
STATION 200031

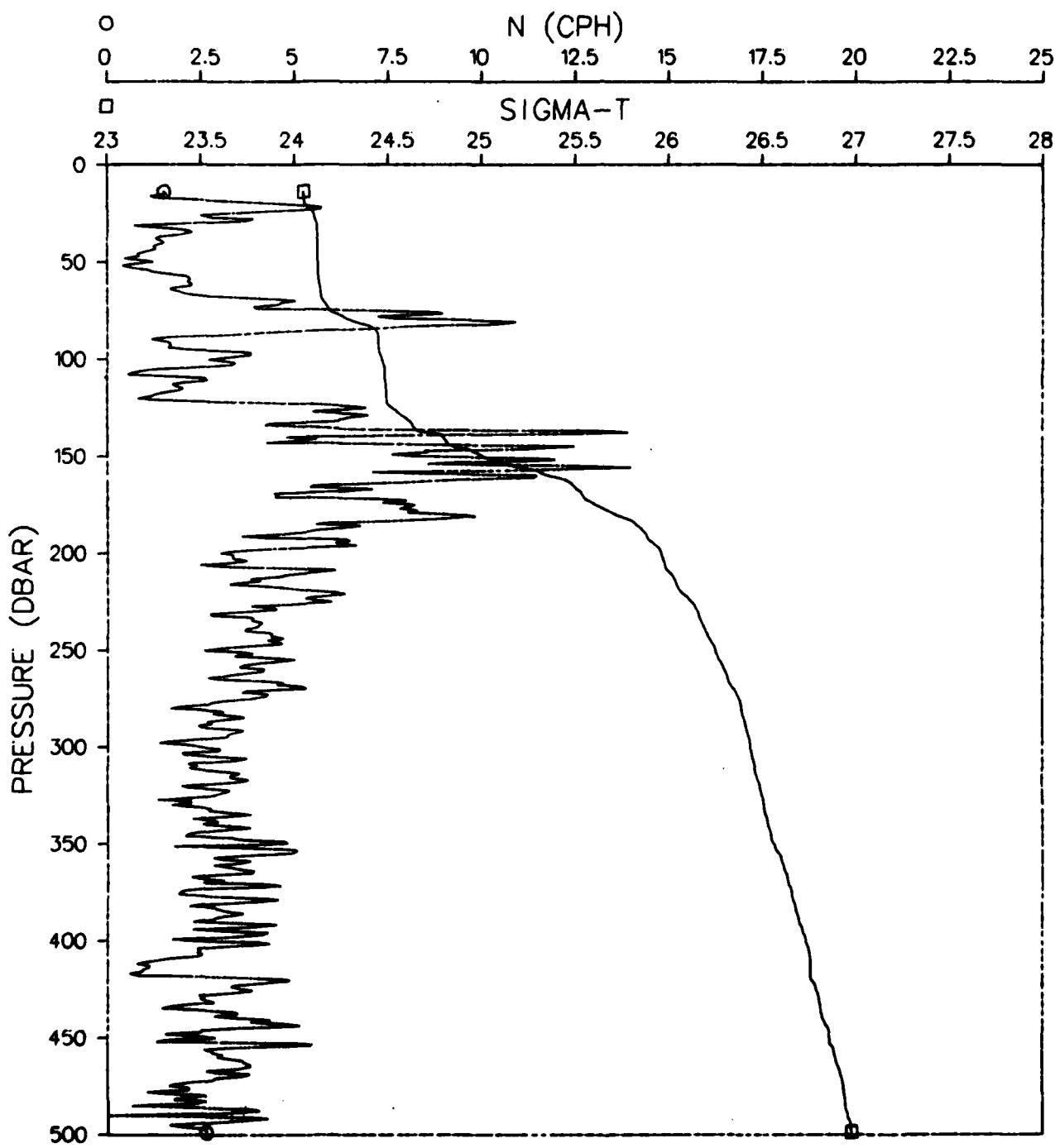


Figure 439.

ATOM 79 RECOVERY
STATION 200032

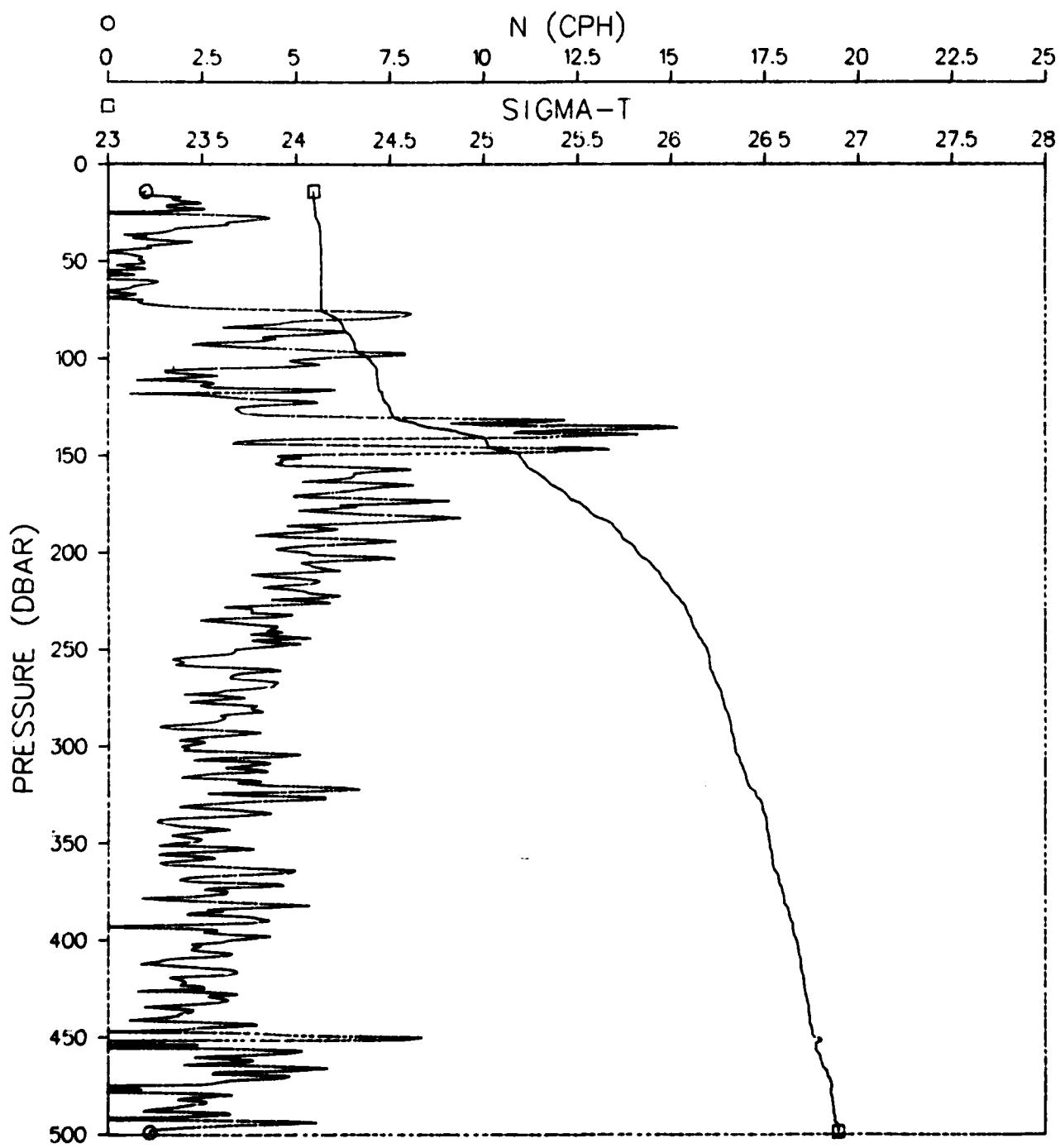


Figure 440.

ATOM 79 RECOVERY
STATION 200033

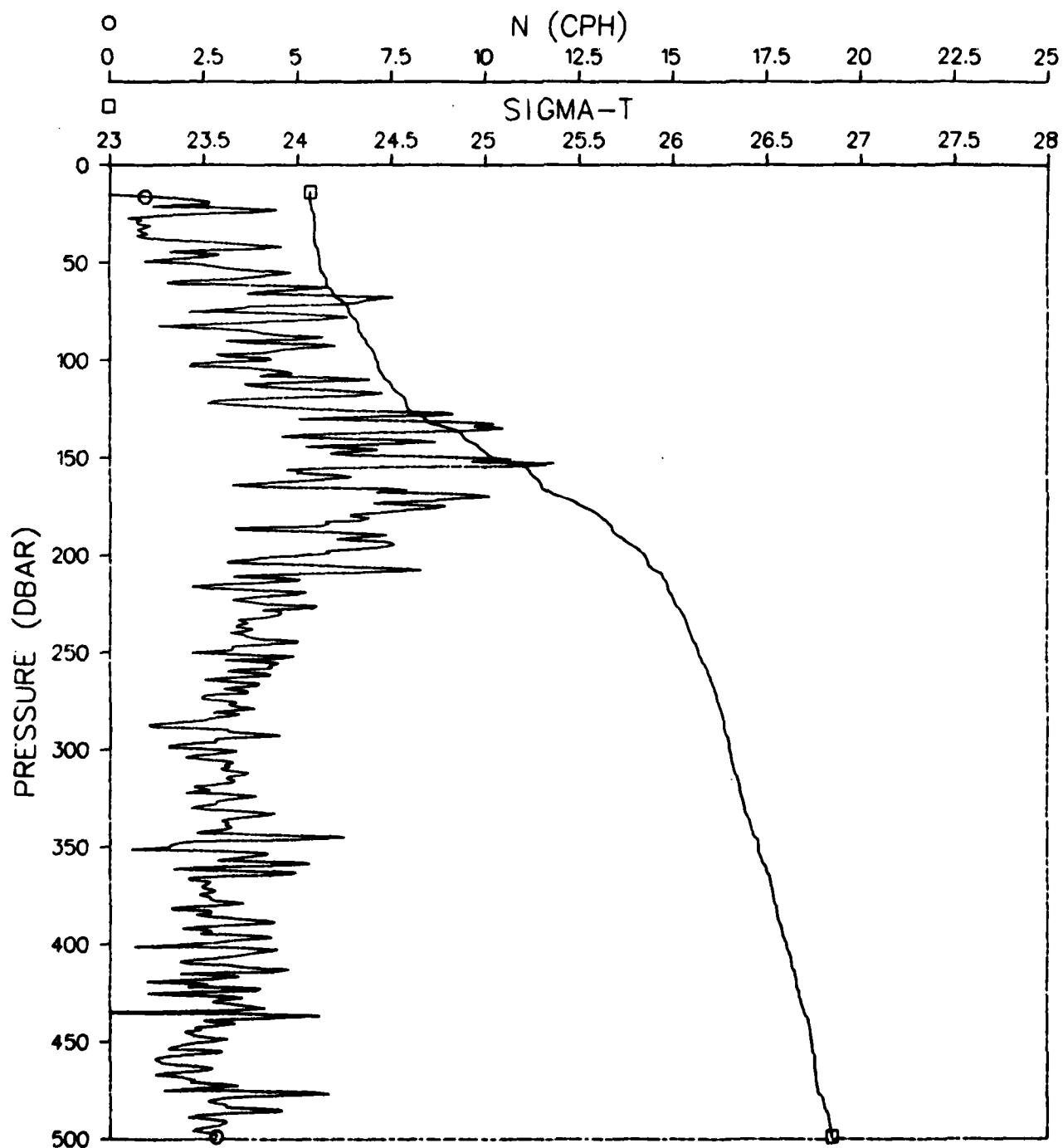


Figure 441.

ATOM 79 RECOVERY
STATION 200034

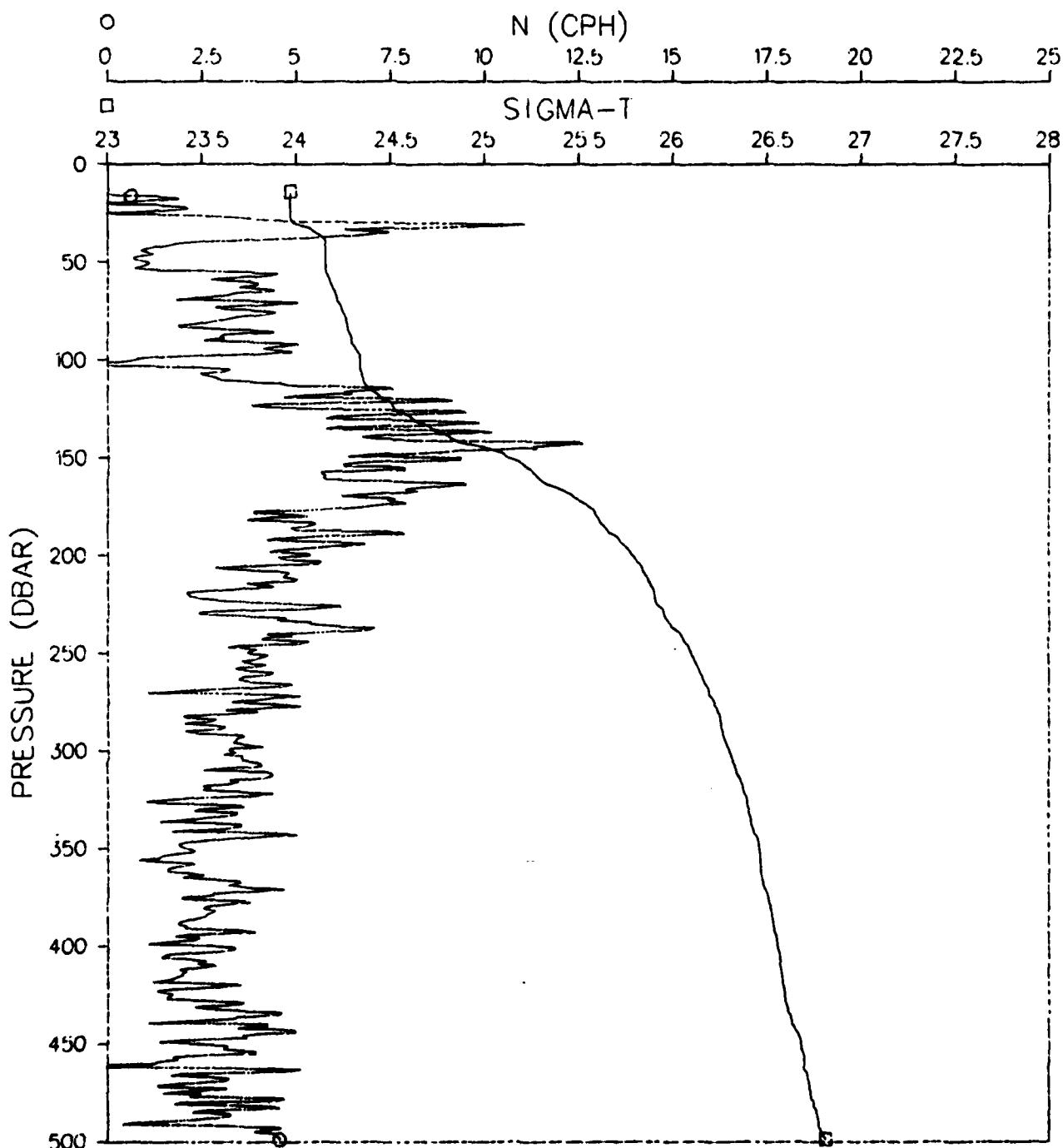


Figure 442.

ATOM 79 RECOVERY
STATION 200035

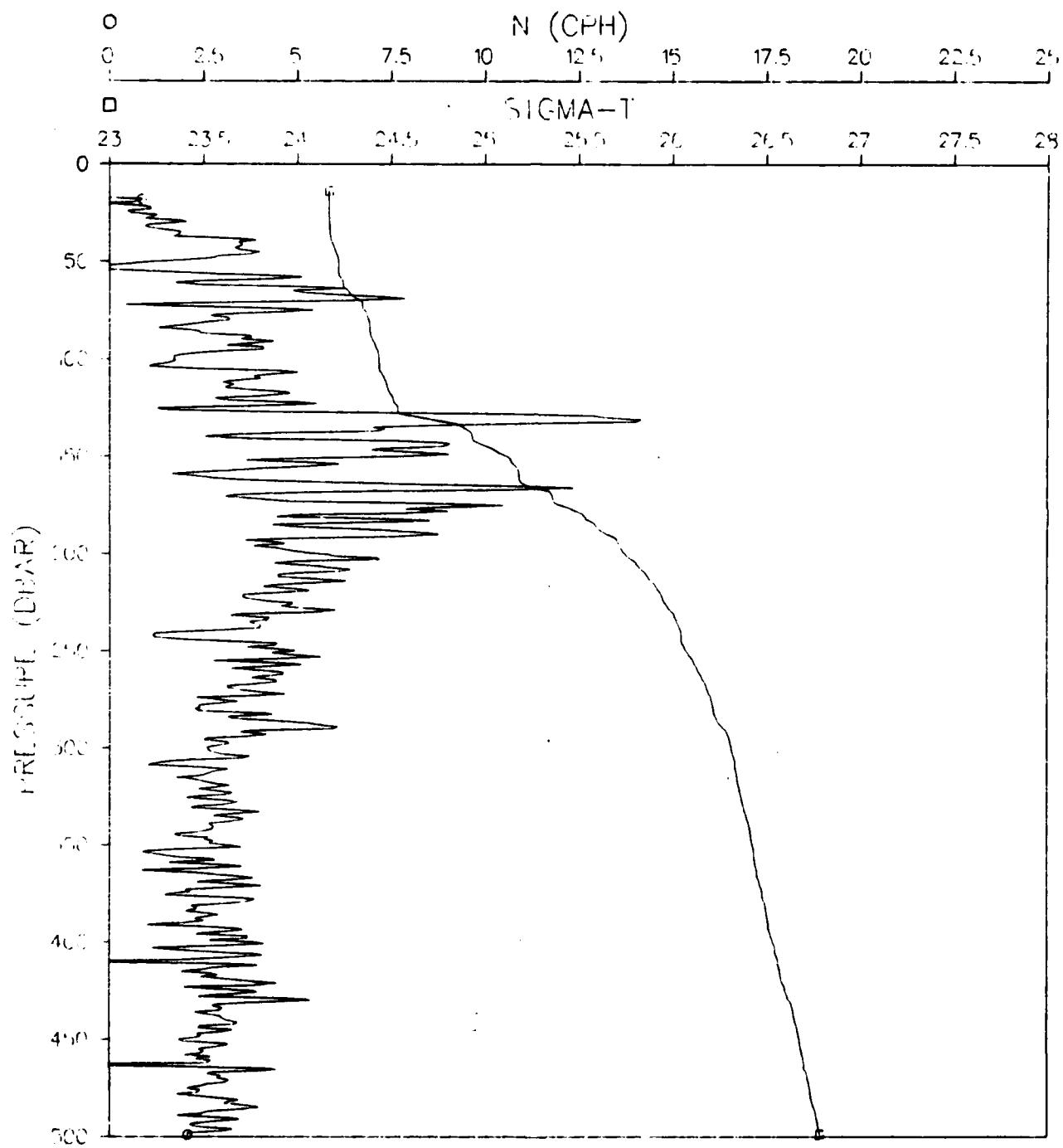


Figure 443.

ATOM 79 RECOVERY
STATION 200036

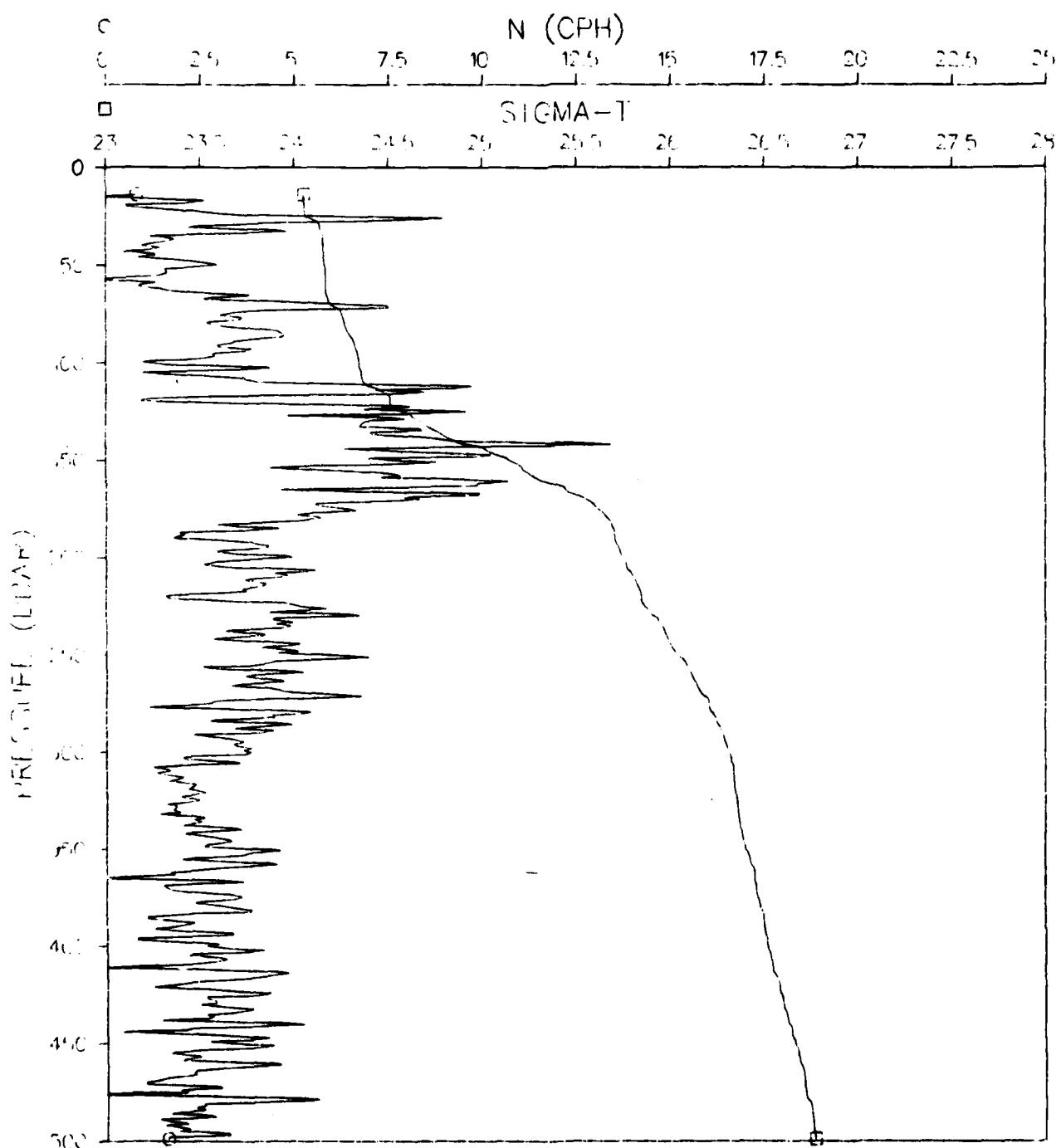


Figure 444.

ATOM 79 RECOVERY
STATION 200037

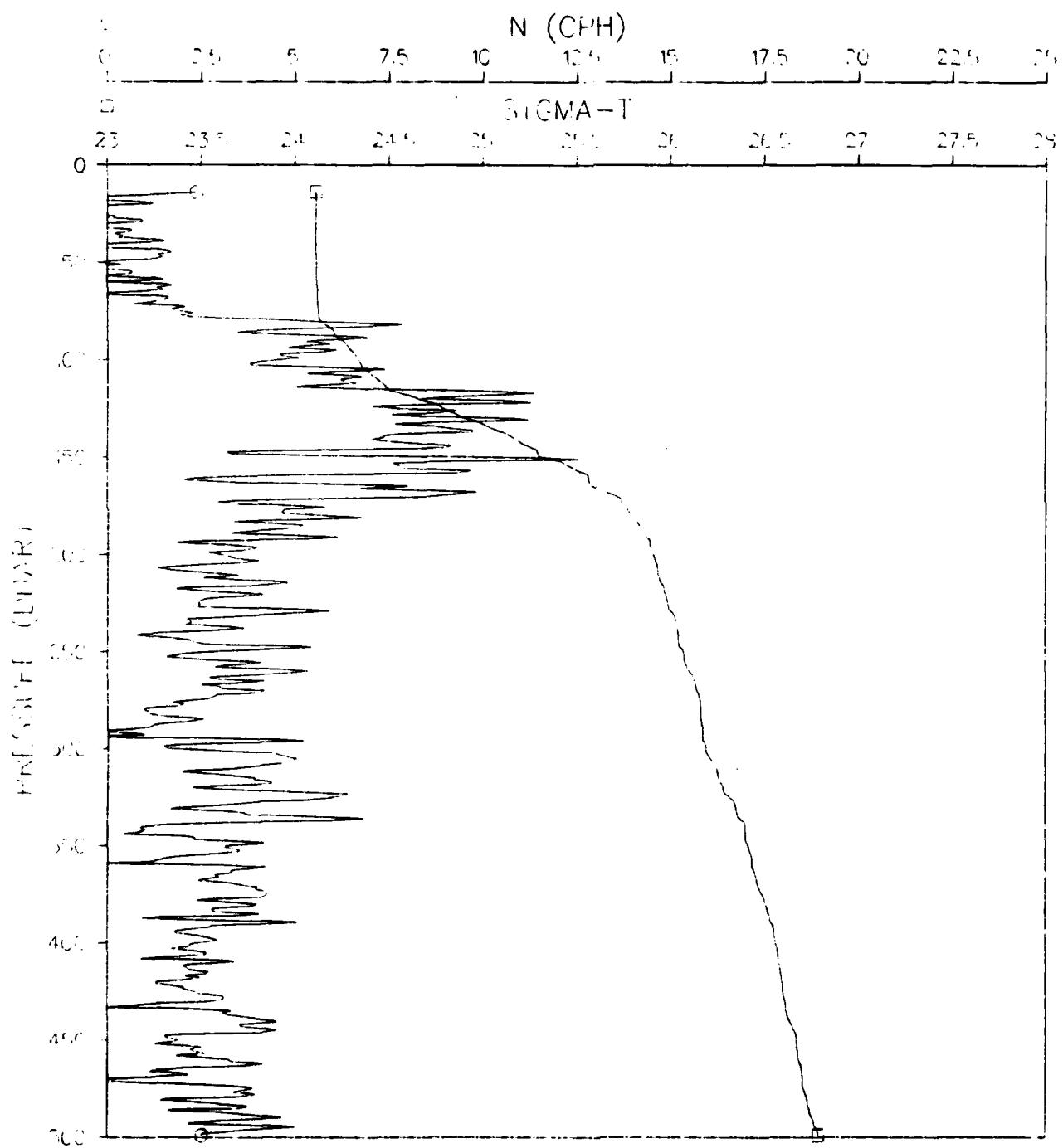


Figure 445.

ATOM 79 RECOVERY
STATION 200038

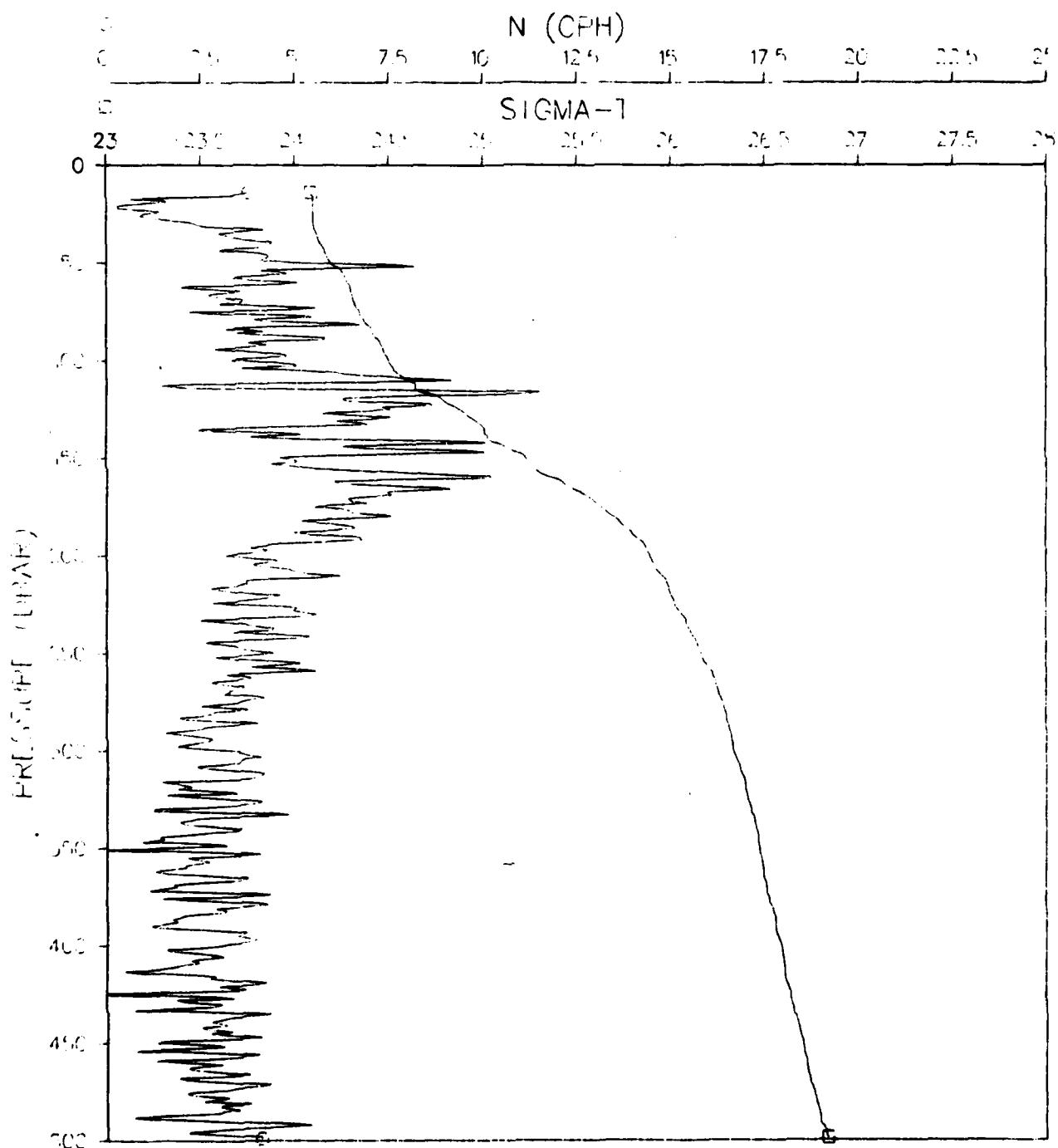


Figure 446.

ATOM 79 RECOVERY
STATION 200039

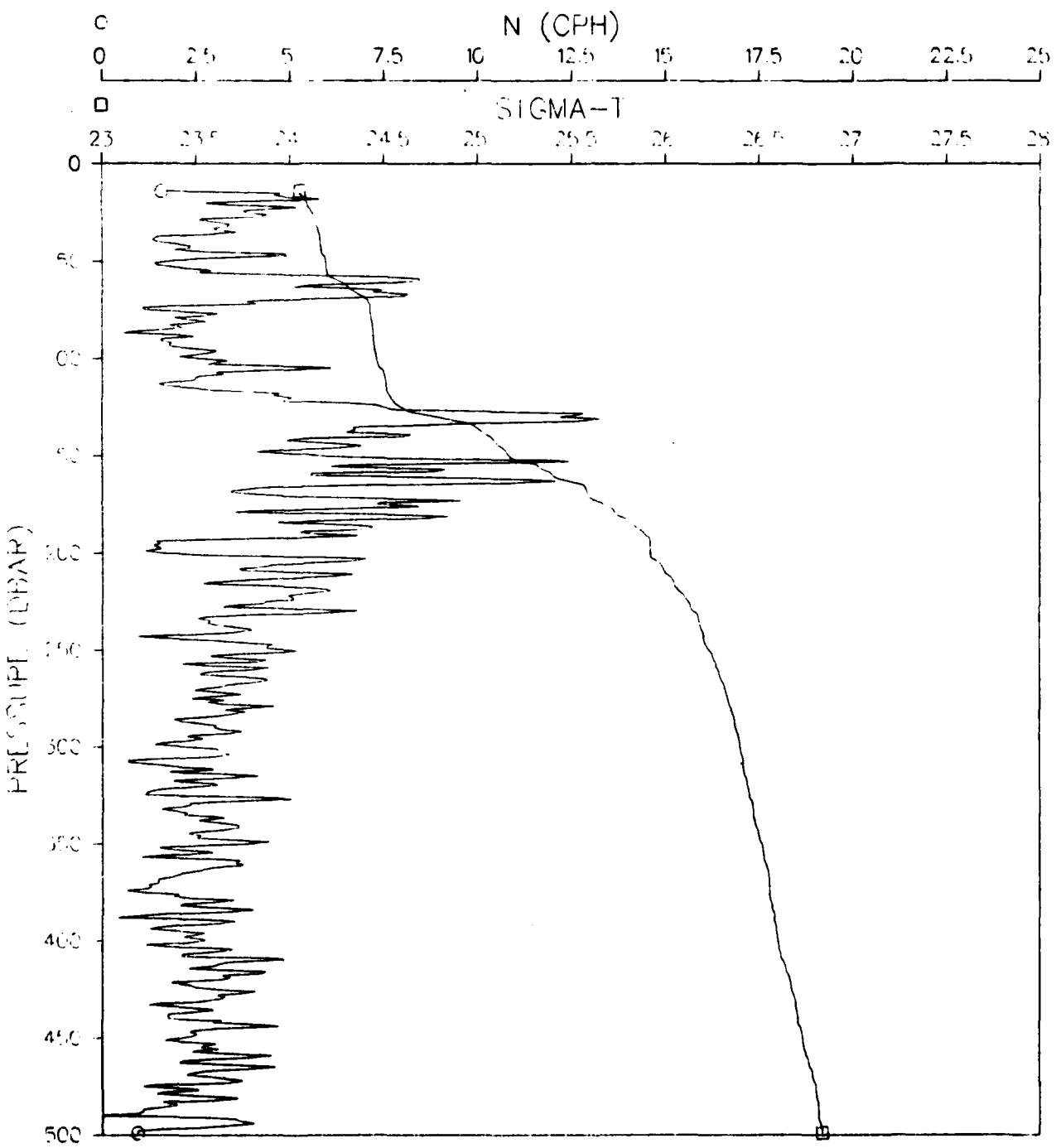


Figure 447.

ATOM 79 RECOVERY
STATION 200040

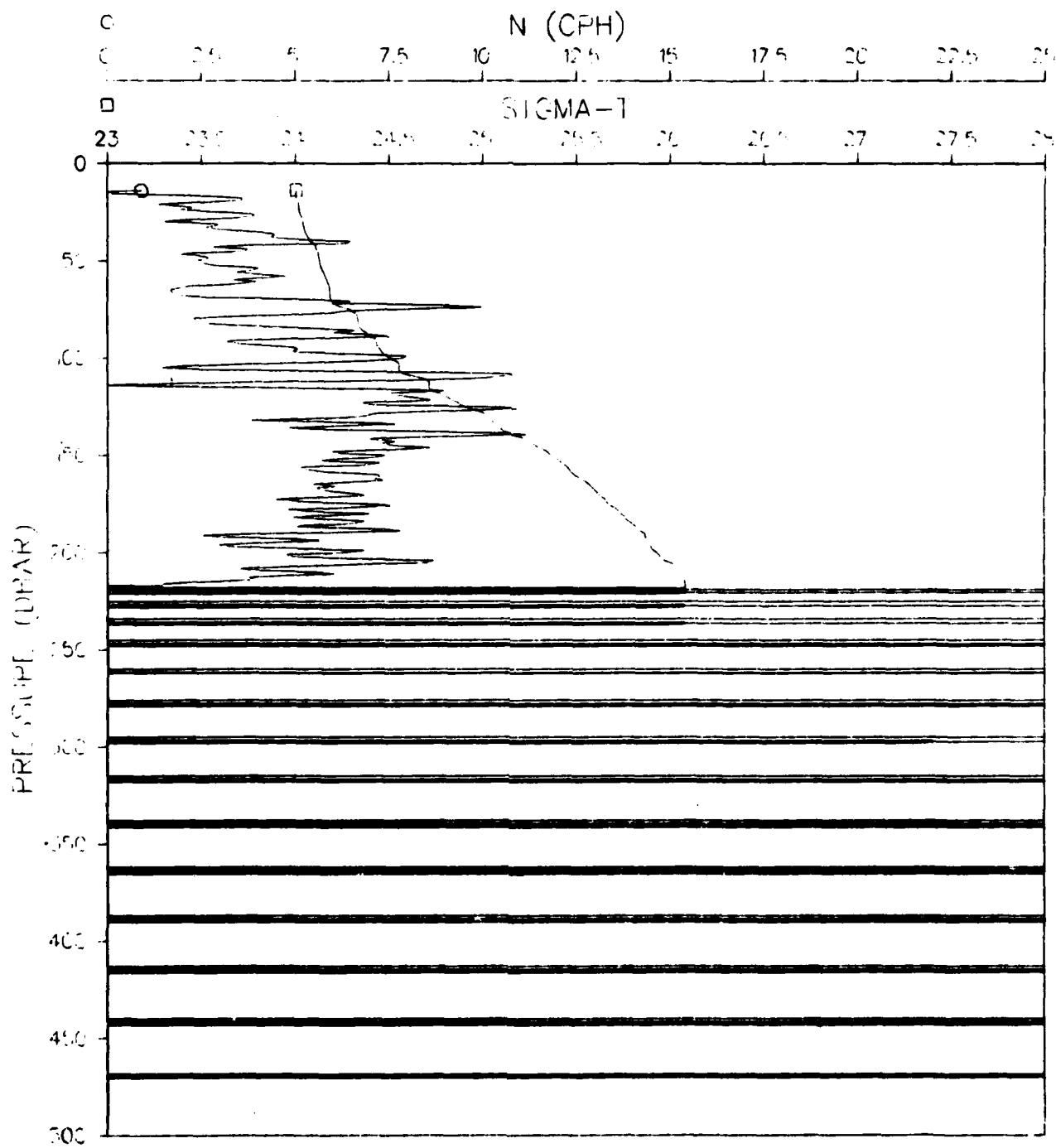


Figure 448.

ATOM 79 RECOVERY
STATION 200041

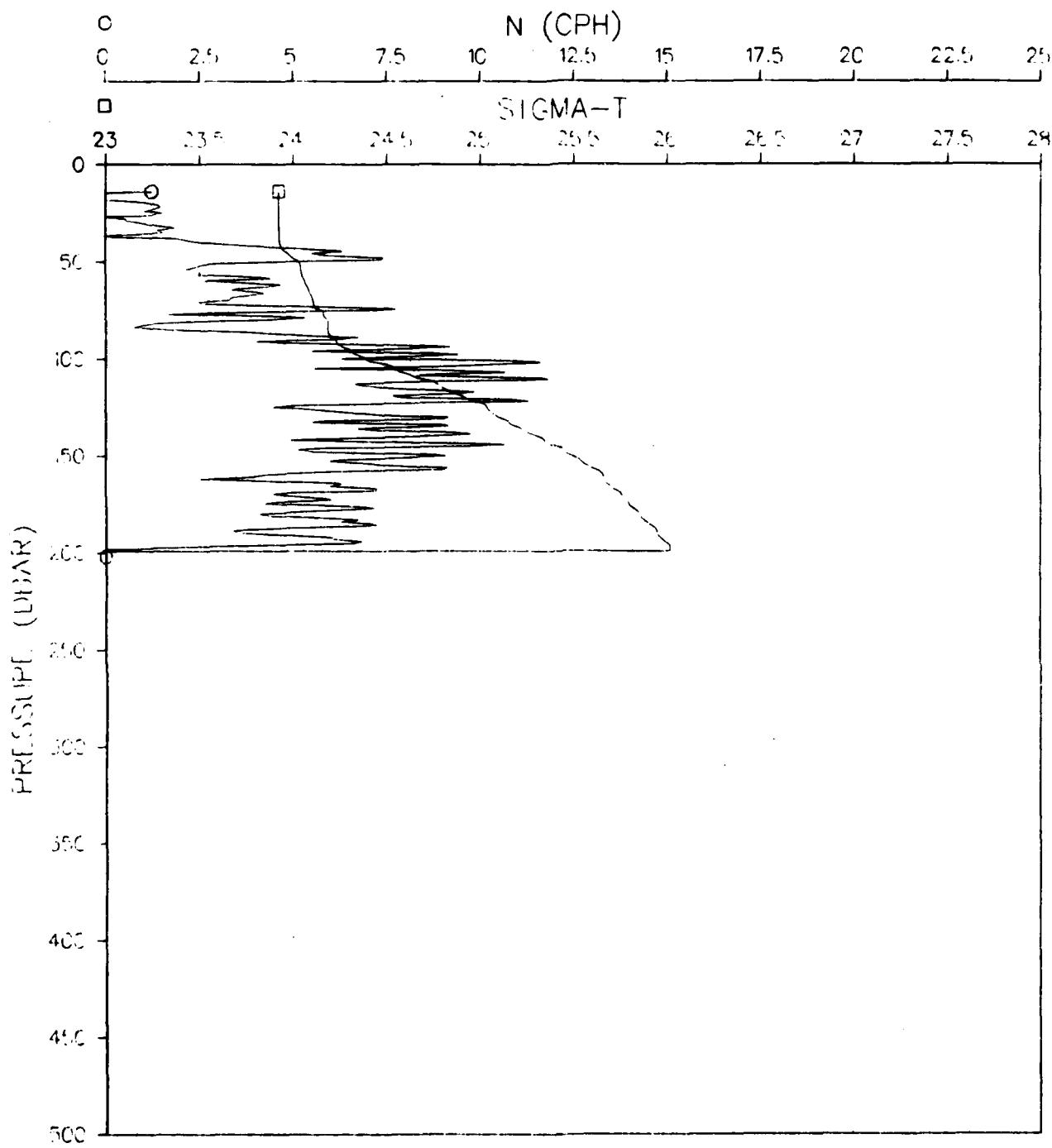


Figure 449.

ATOM 79 RECOVERY
STATION 200001

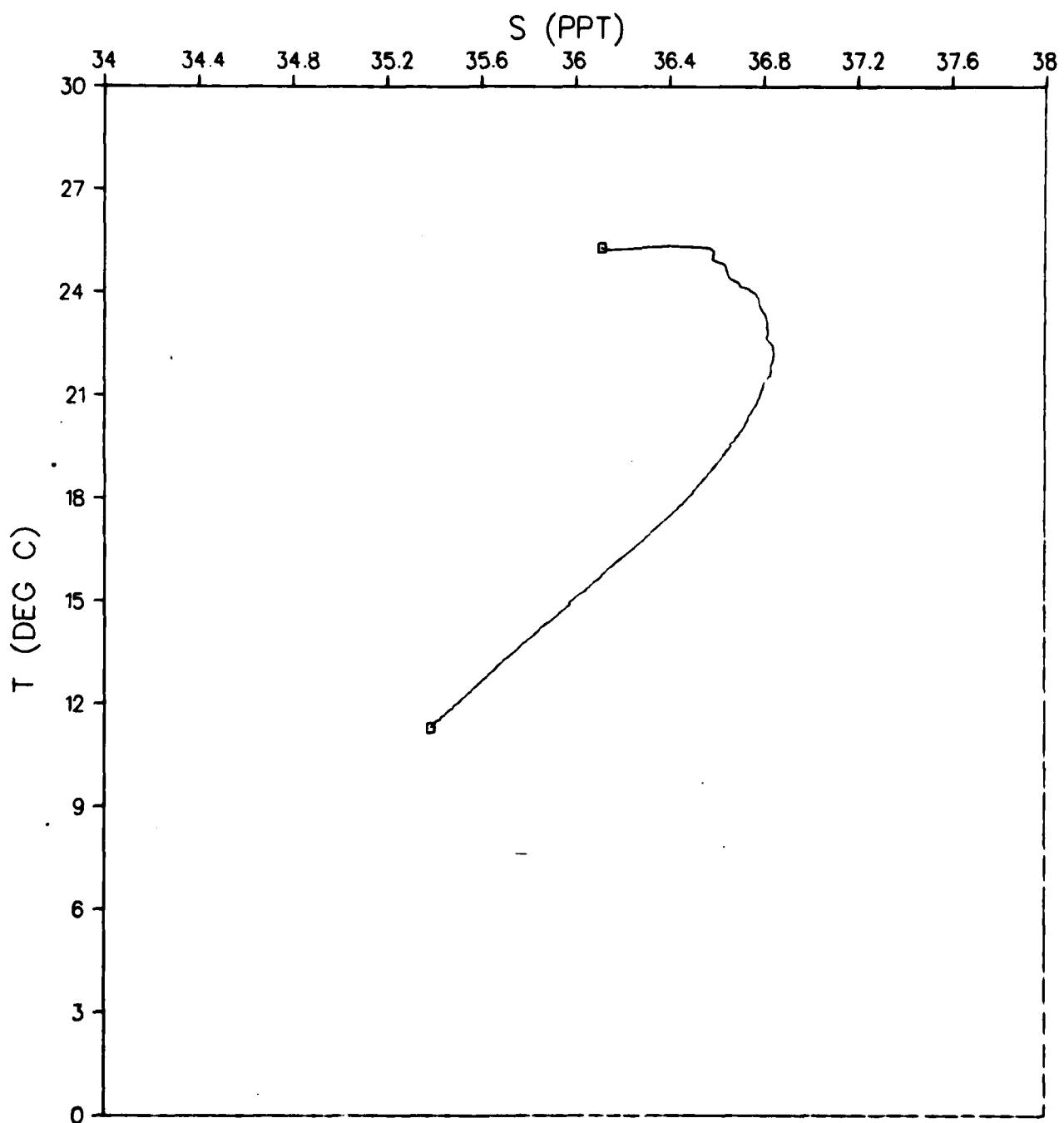


Figure 450.

ATOM 79 RECOVERY
STATION 200002

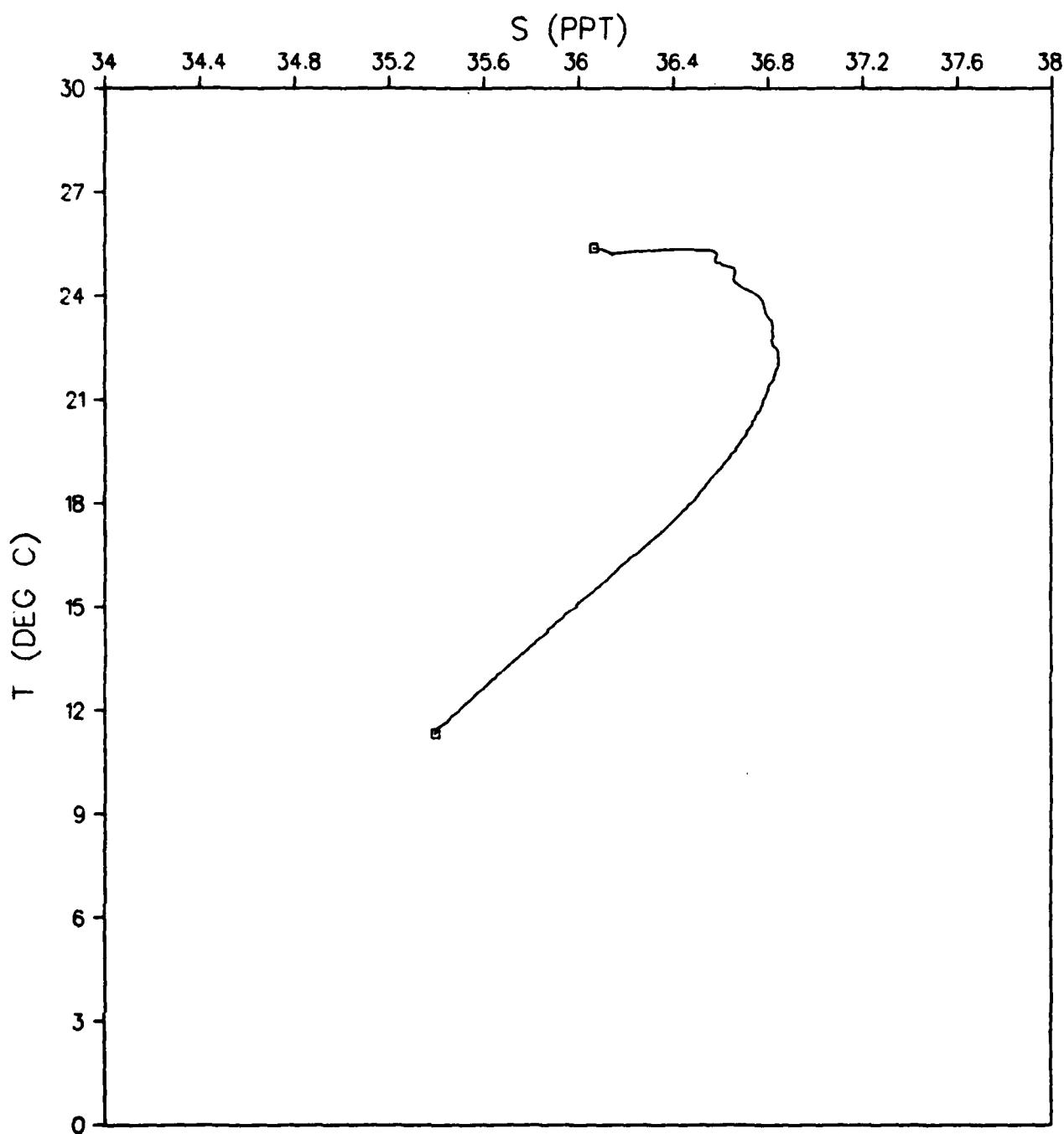


Figure 451.

ATOM 79 RECOVERY
STATION 200003

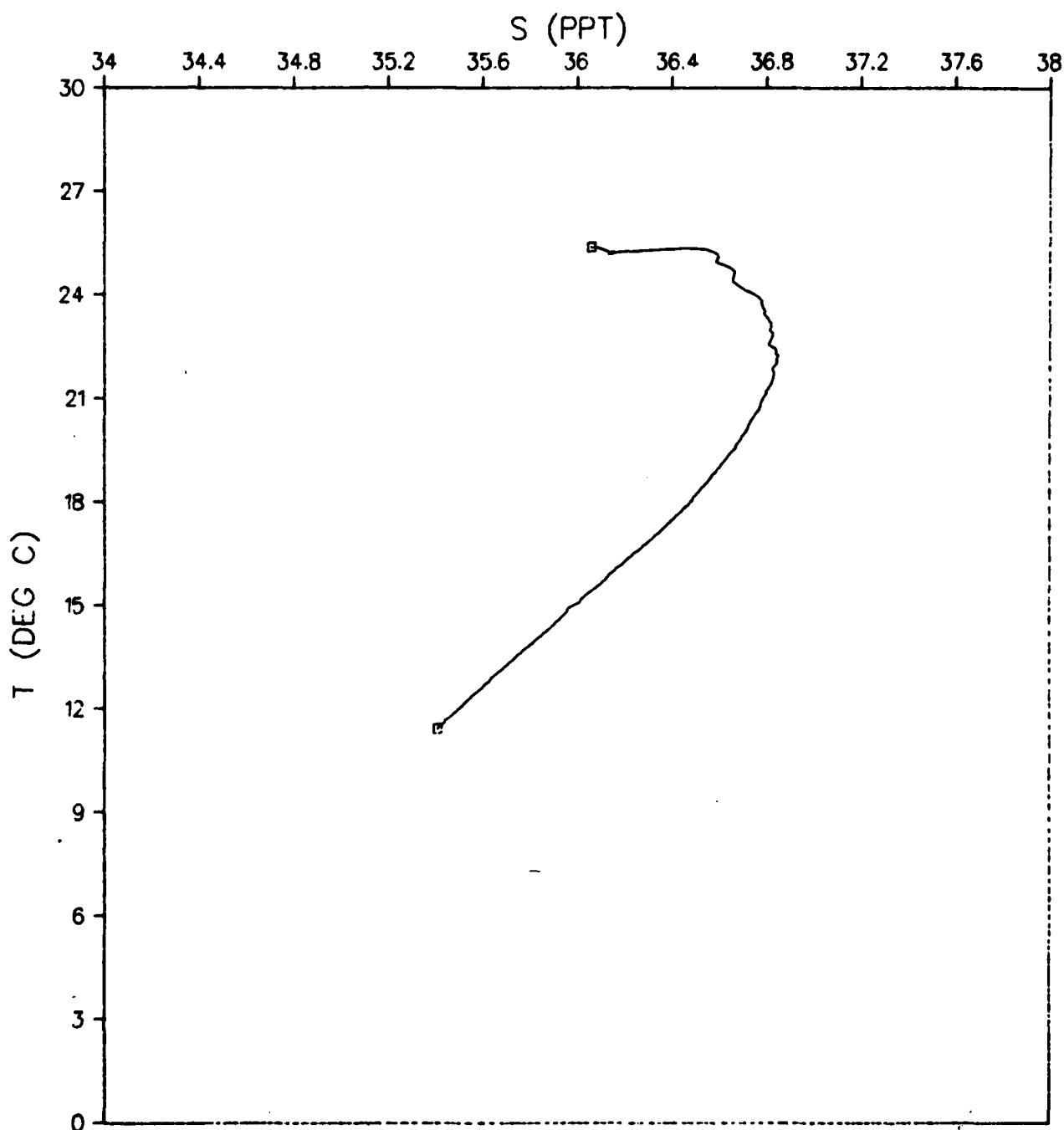


Figure 452.

ATOM 79 RECOVERY
STATION 200004

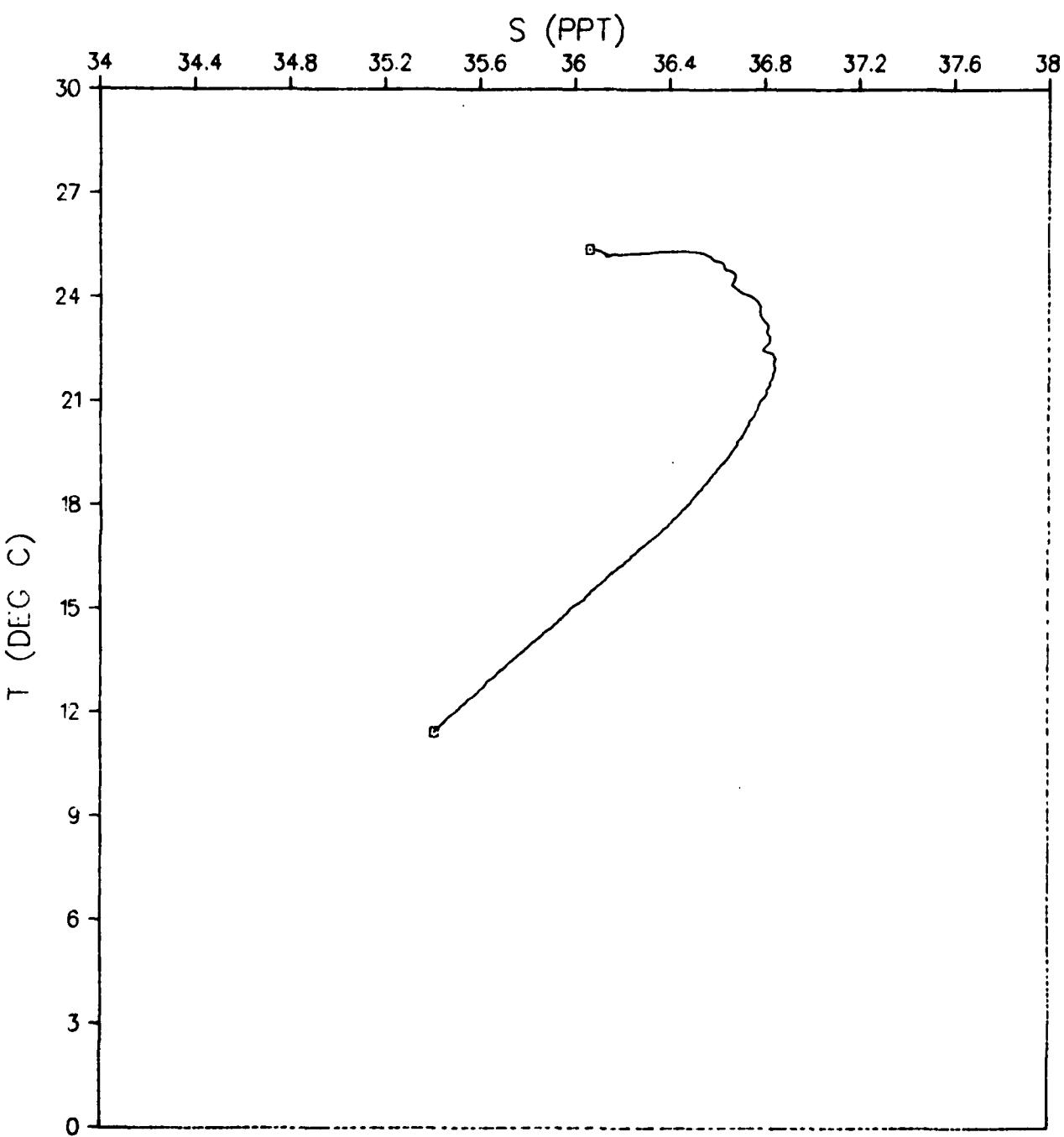


Figure 453.

ATOM 79 RECOVERY
STATION 200005

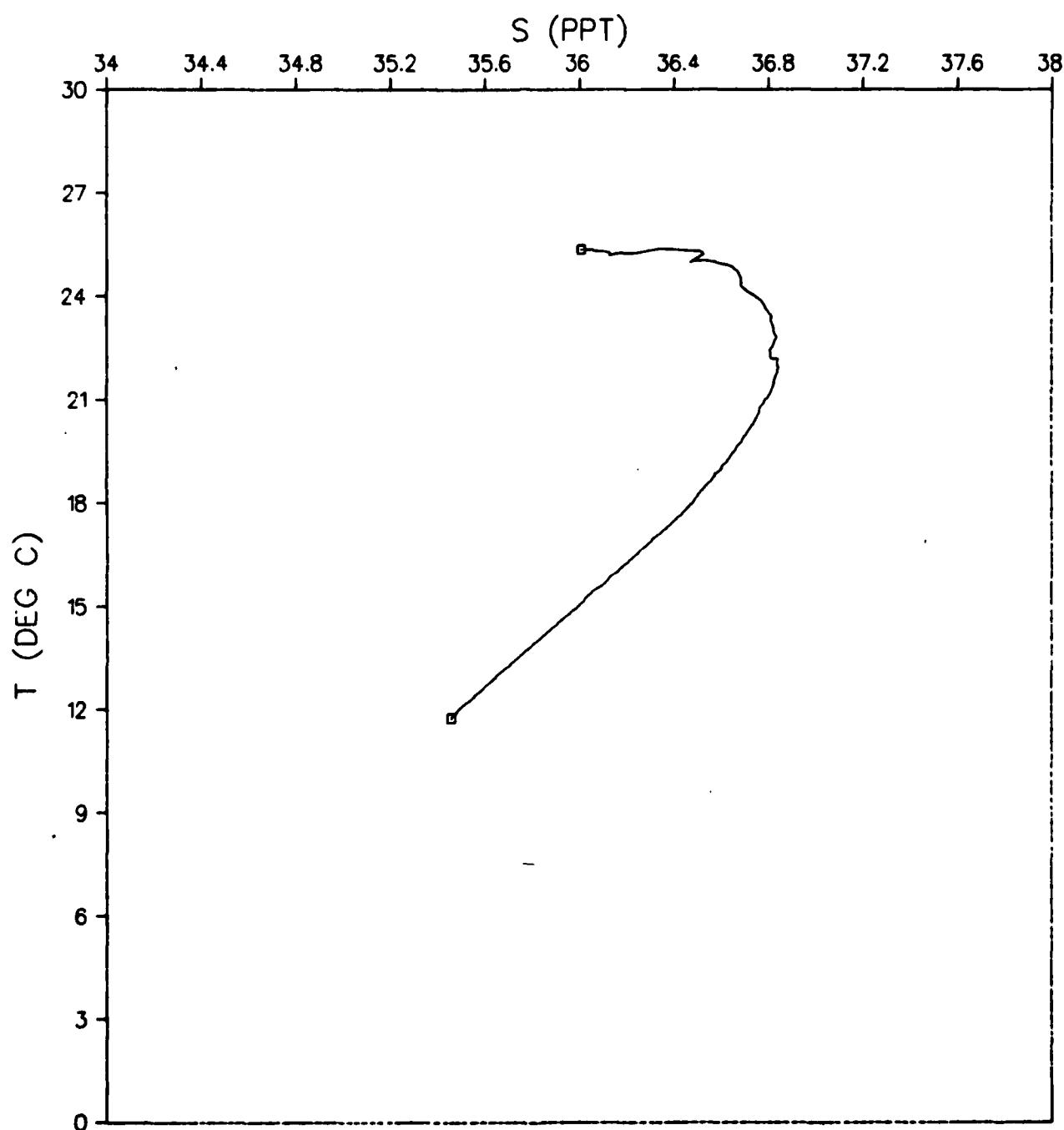


Figure 454.

ATOM 79 RECOVERY
STATION 200006

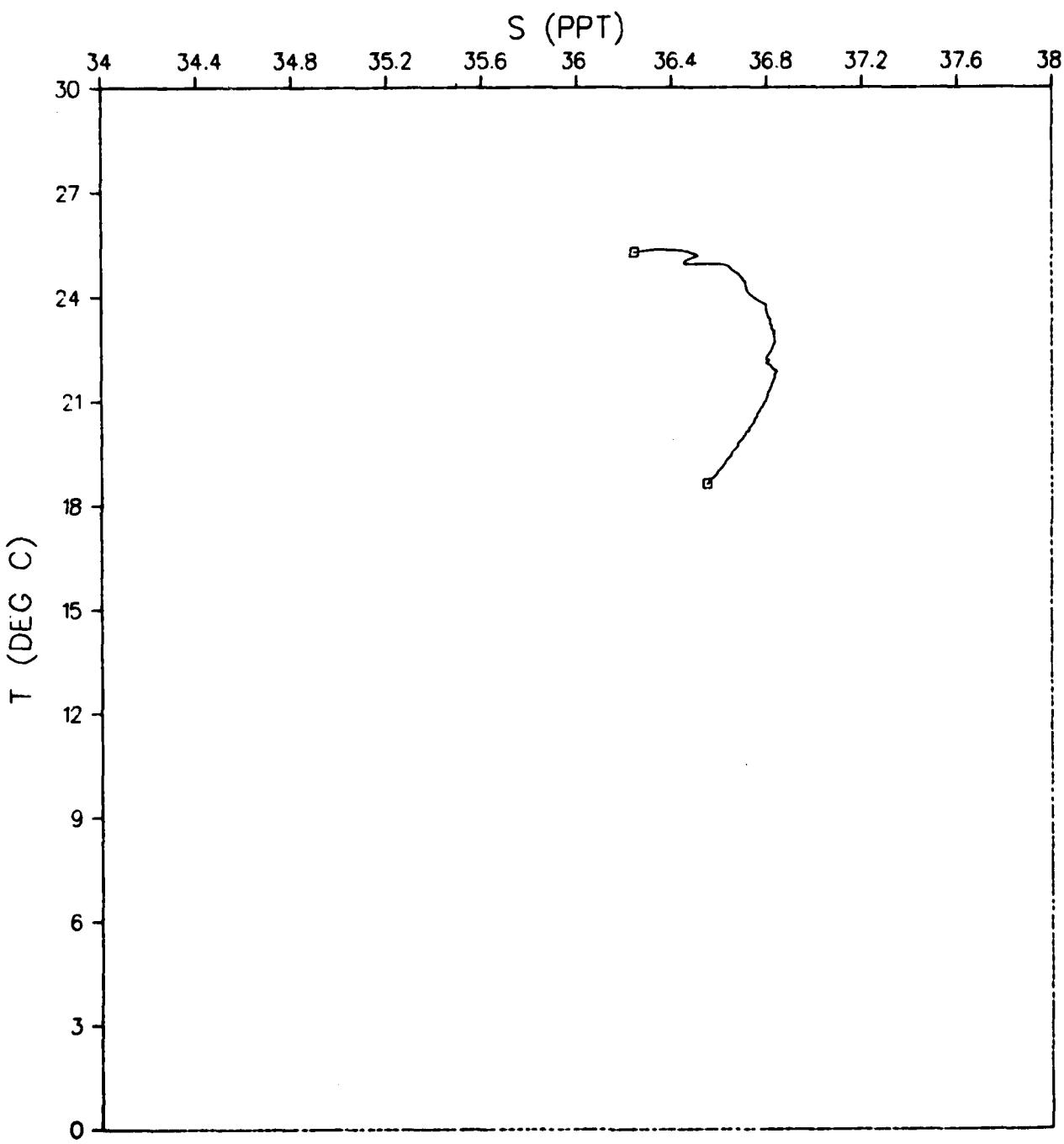


Figure 455.

ATOM 79 RECOVERY
STATION 200007

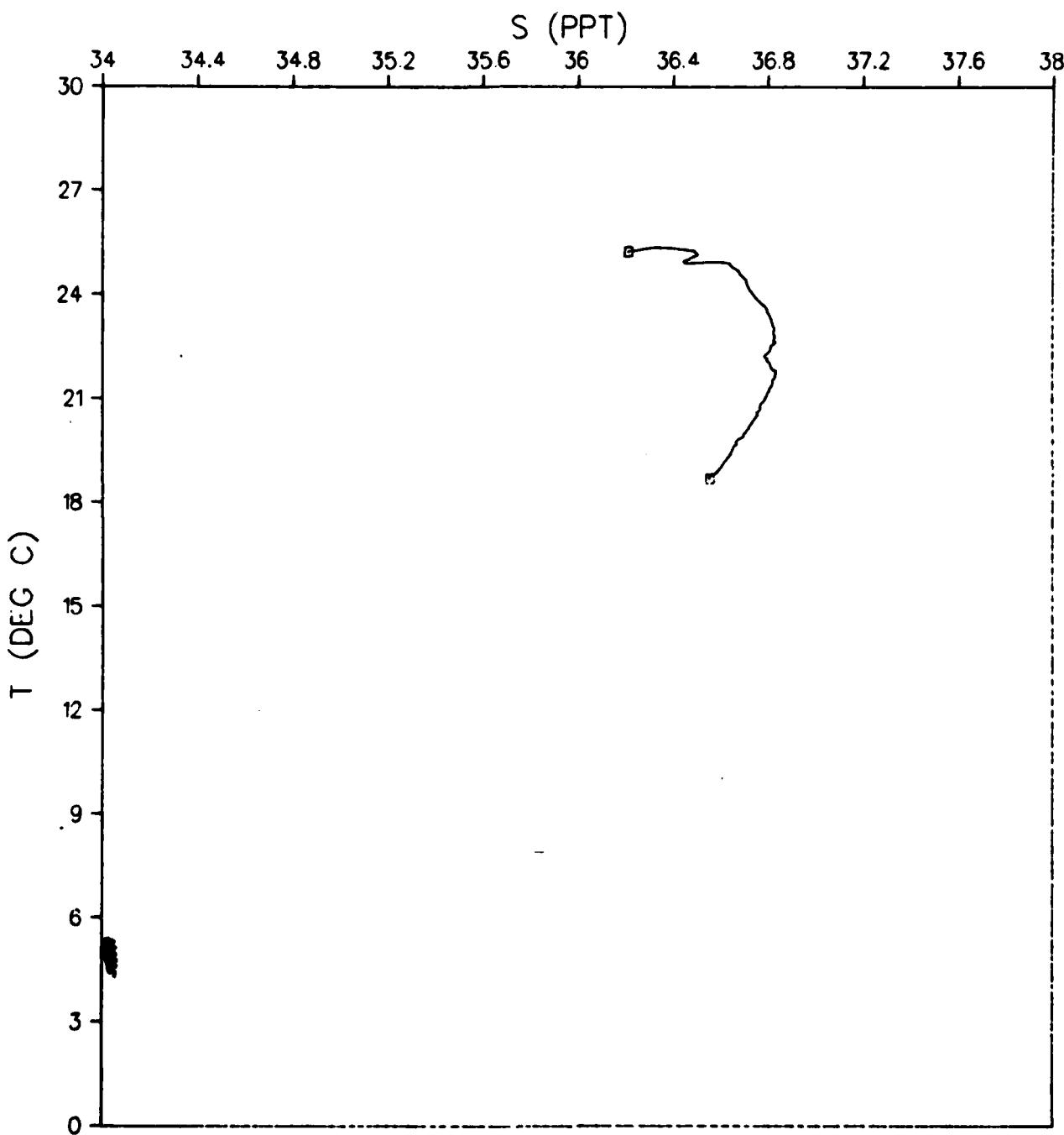


Figure 456.

ATOM 79 RECOVERY
STATION 200008

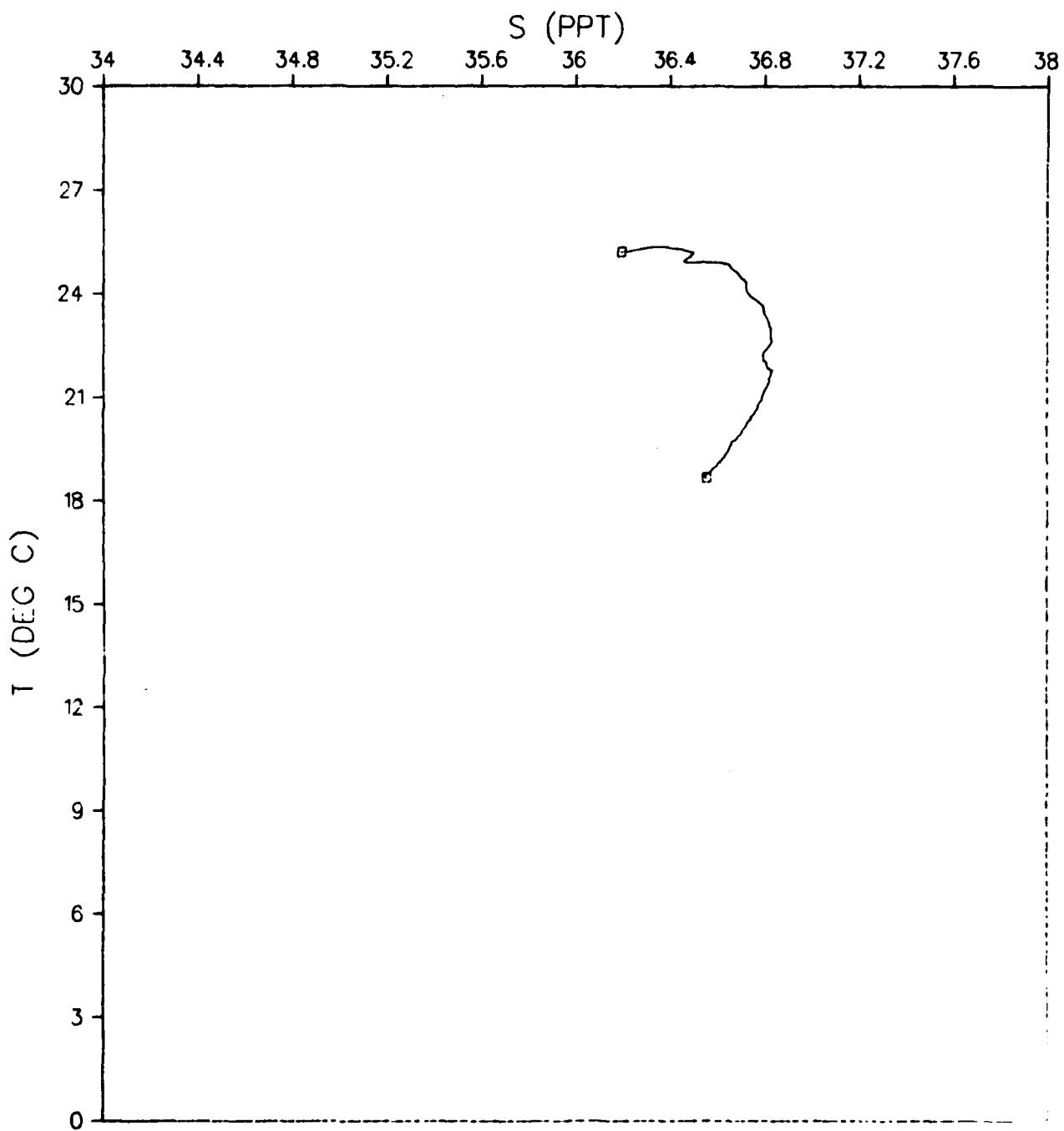
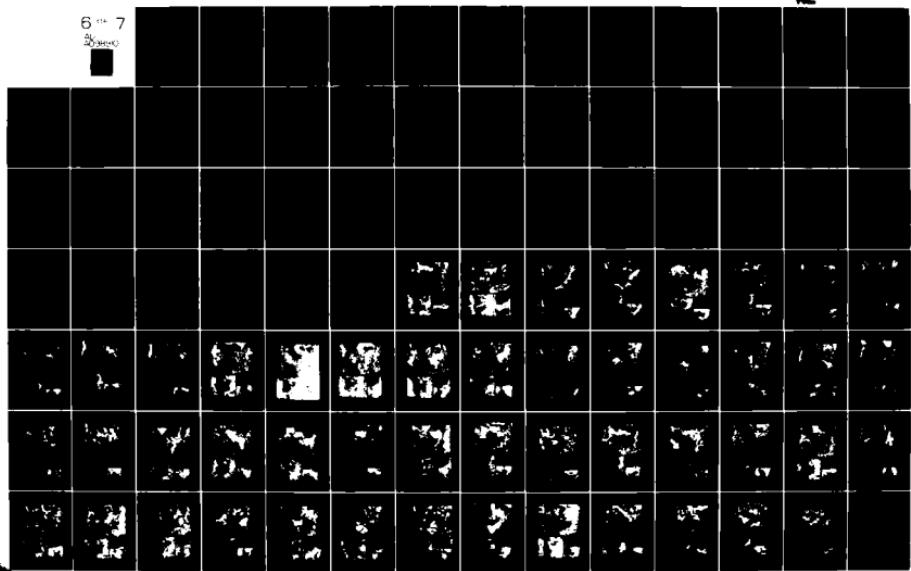


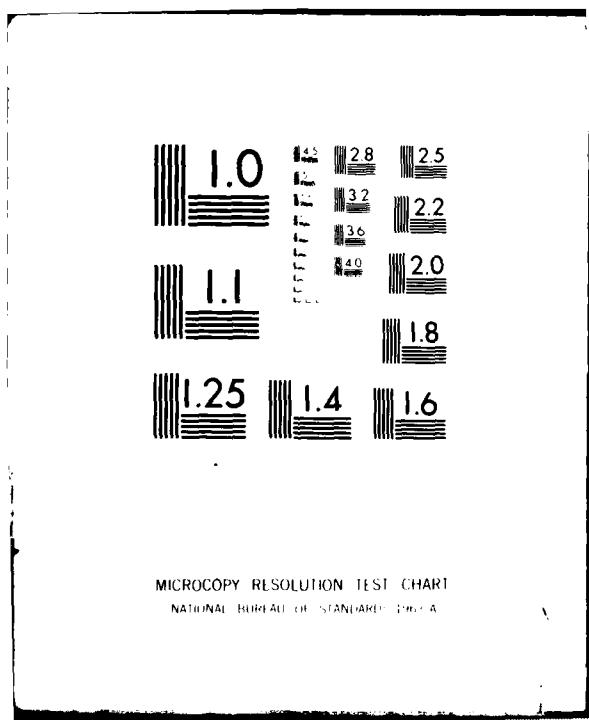
Figure 457.

AD-A098 910 NAVAL OCEAN RESEARCH AND DEVELOPMENT ACTIVITY NSTL S-ETC F/8 8/3
A COMPREHENSIVE GRAPHICAL REPRESENTATION OF DATA OBTAINED IN TH-ETC
OCT 80 K D SAUNDERS, A W GREEN, M T BERGIN
UNCLASSIFIED NORDA-TN-88

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ATOM 79 RECOVERY
STATION 200009

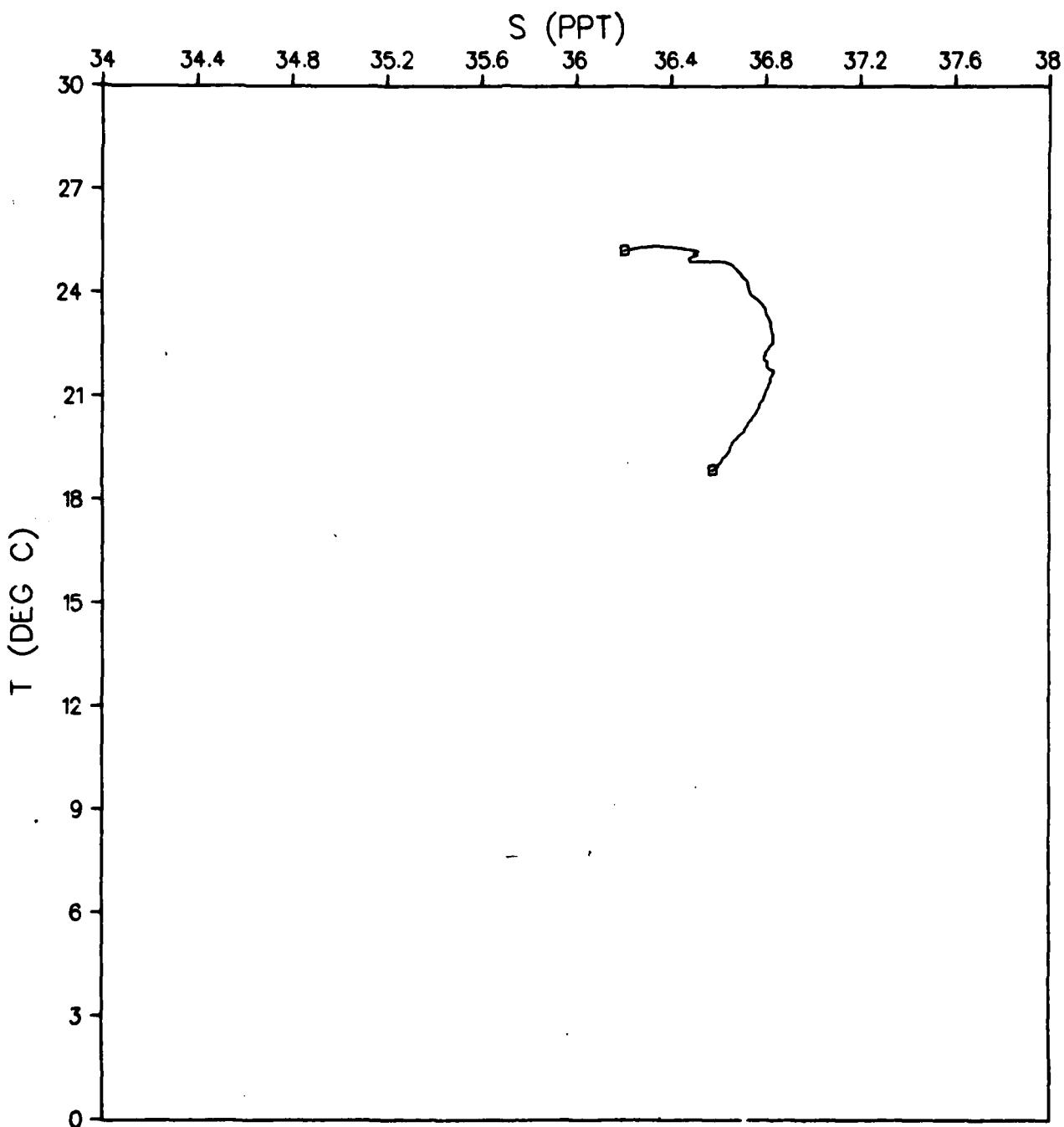


Figure 458.

ATOM 79 RECOVERY
STATION 200010

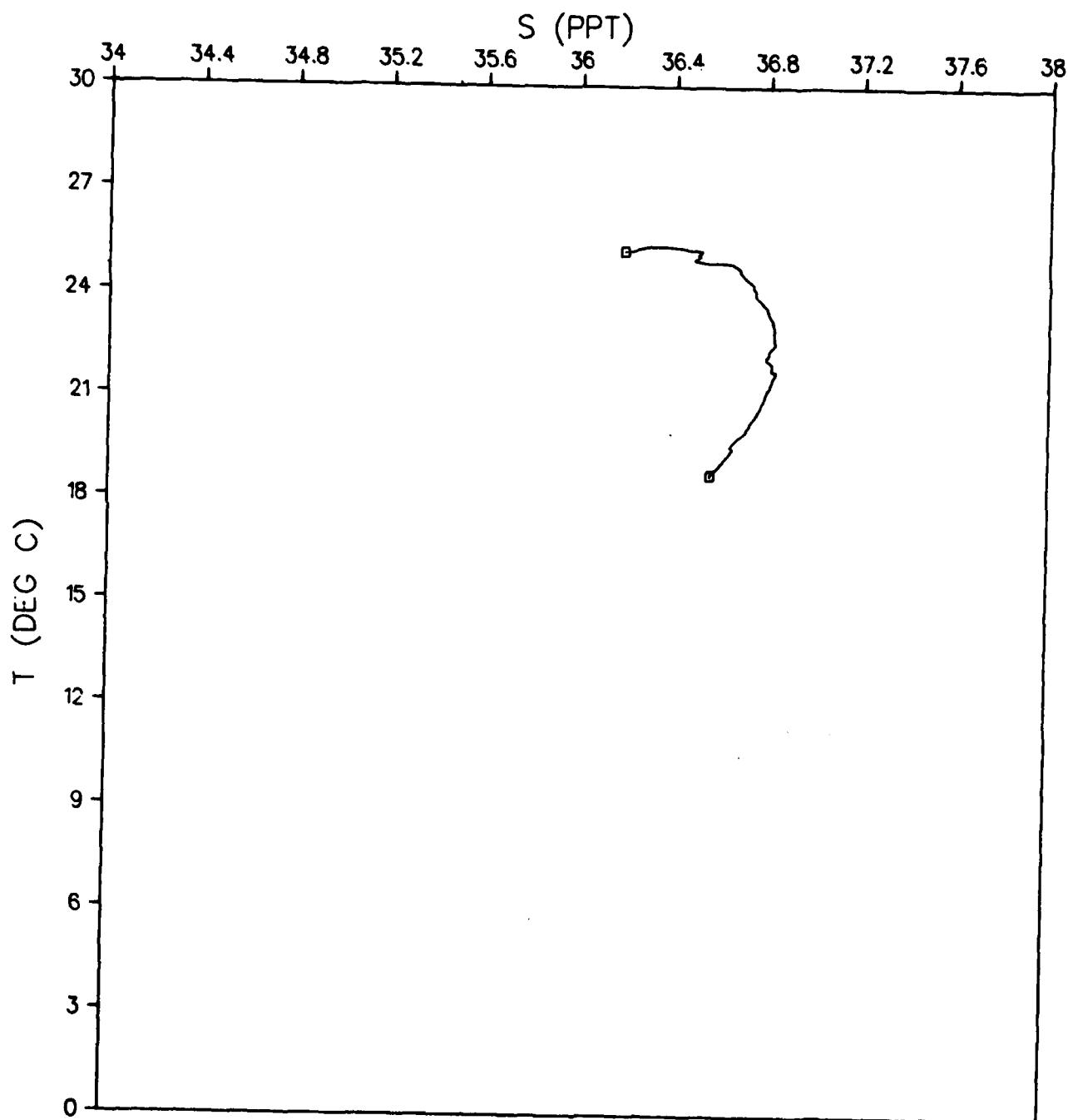


Figure 459.

ATOM 79 RECOVERY
STATION 200011

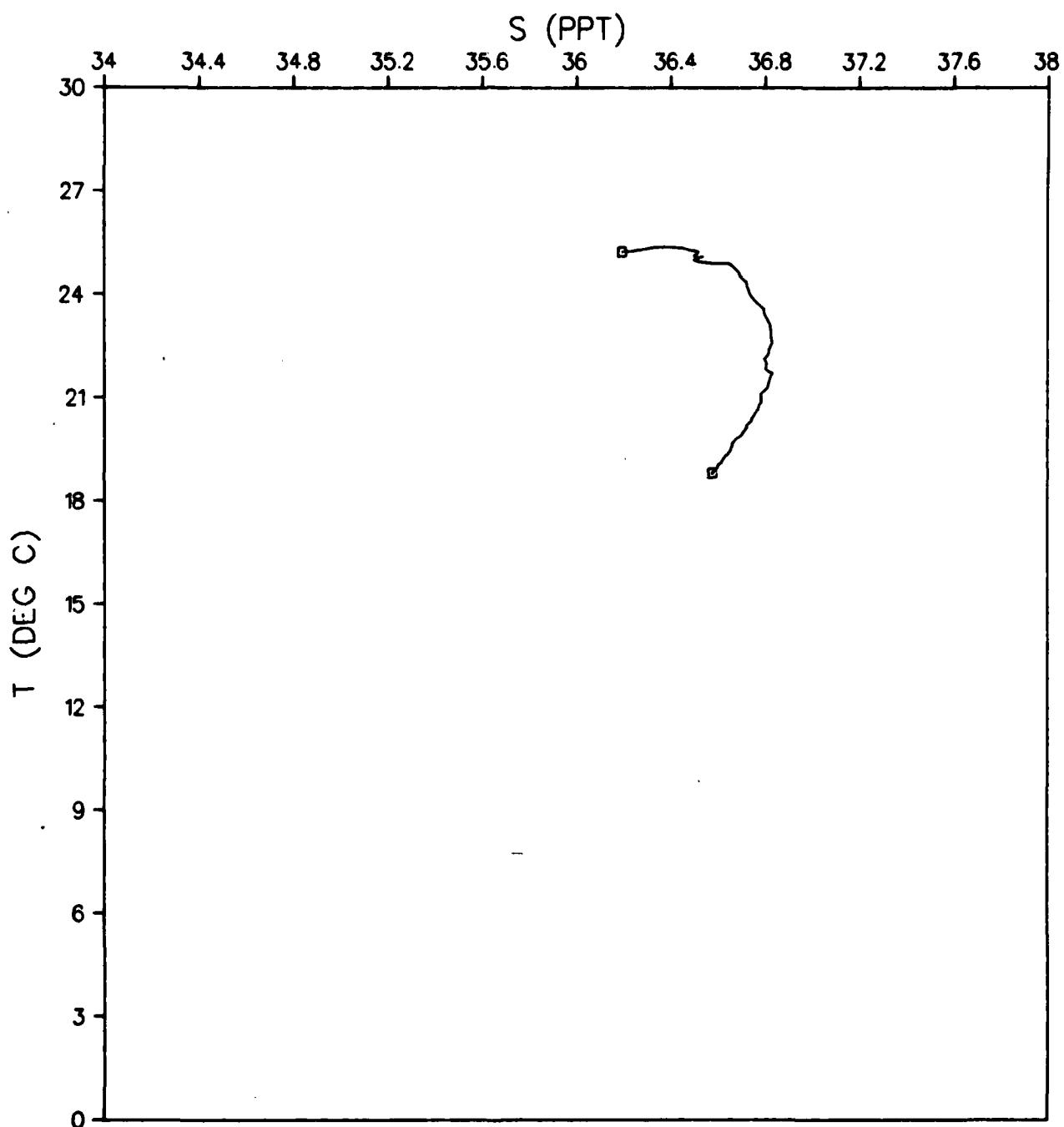


Figure 460.

ATOM 79 RECOVERY
STATION 200012

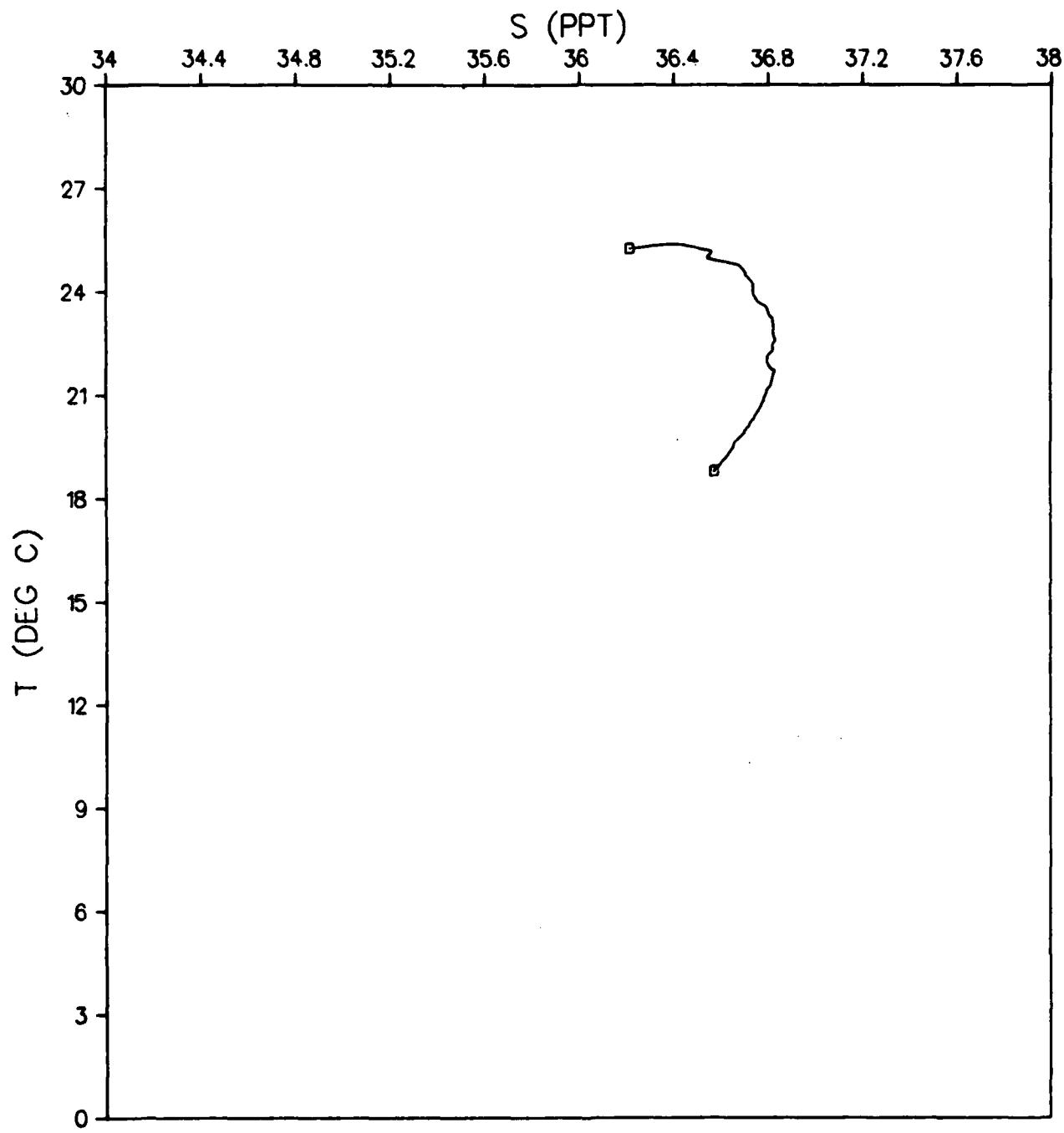


Figure 461.

ATOM 79 RECOVERY
STATION 200013

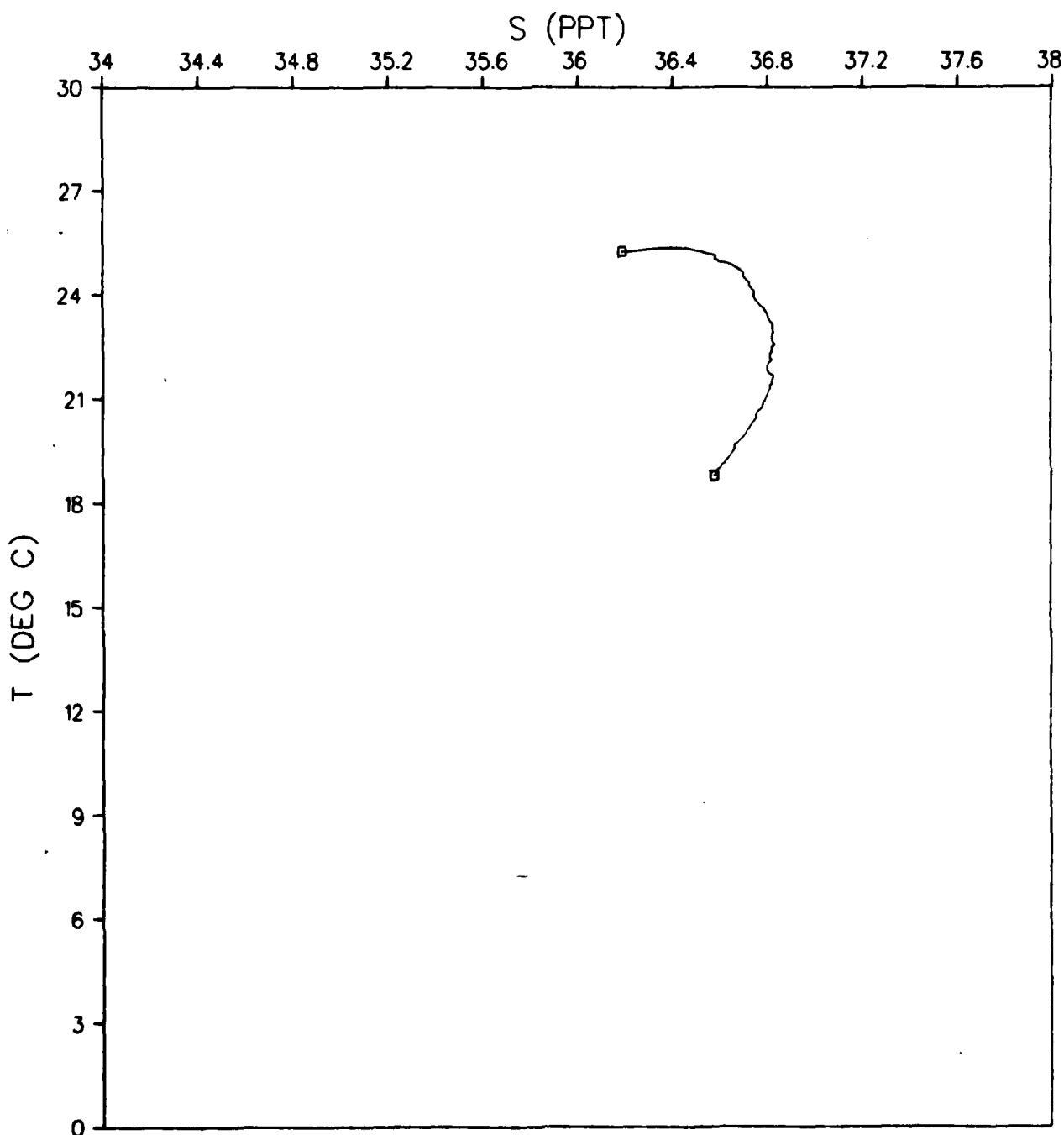


Figure 462.

ATOM 79 RECOVERY
STATION 200014

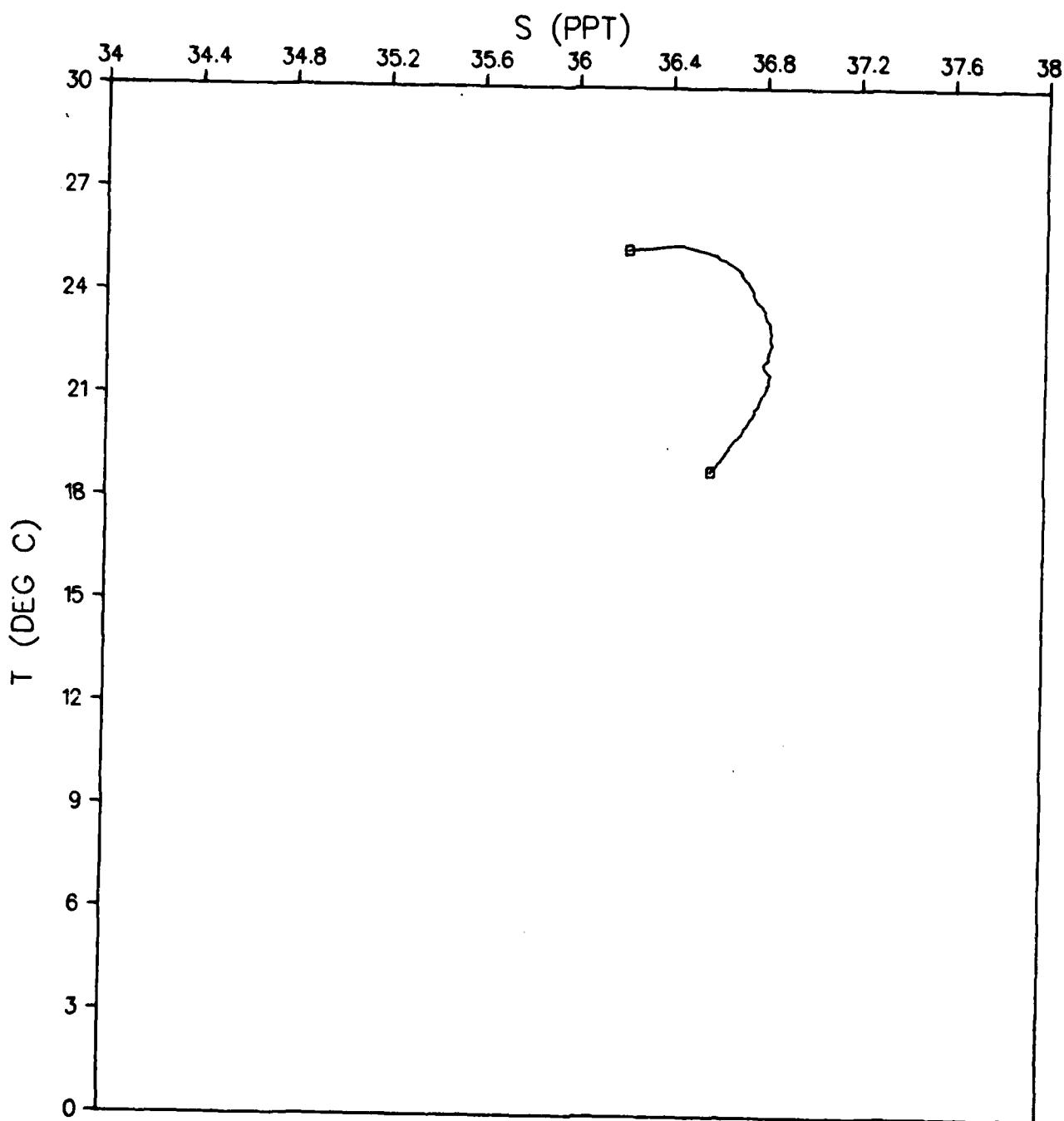


Figure 463.

ATOM 79 RECOVERY
STATION 200015

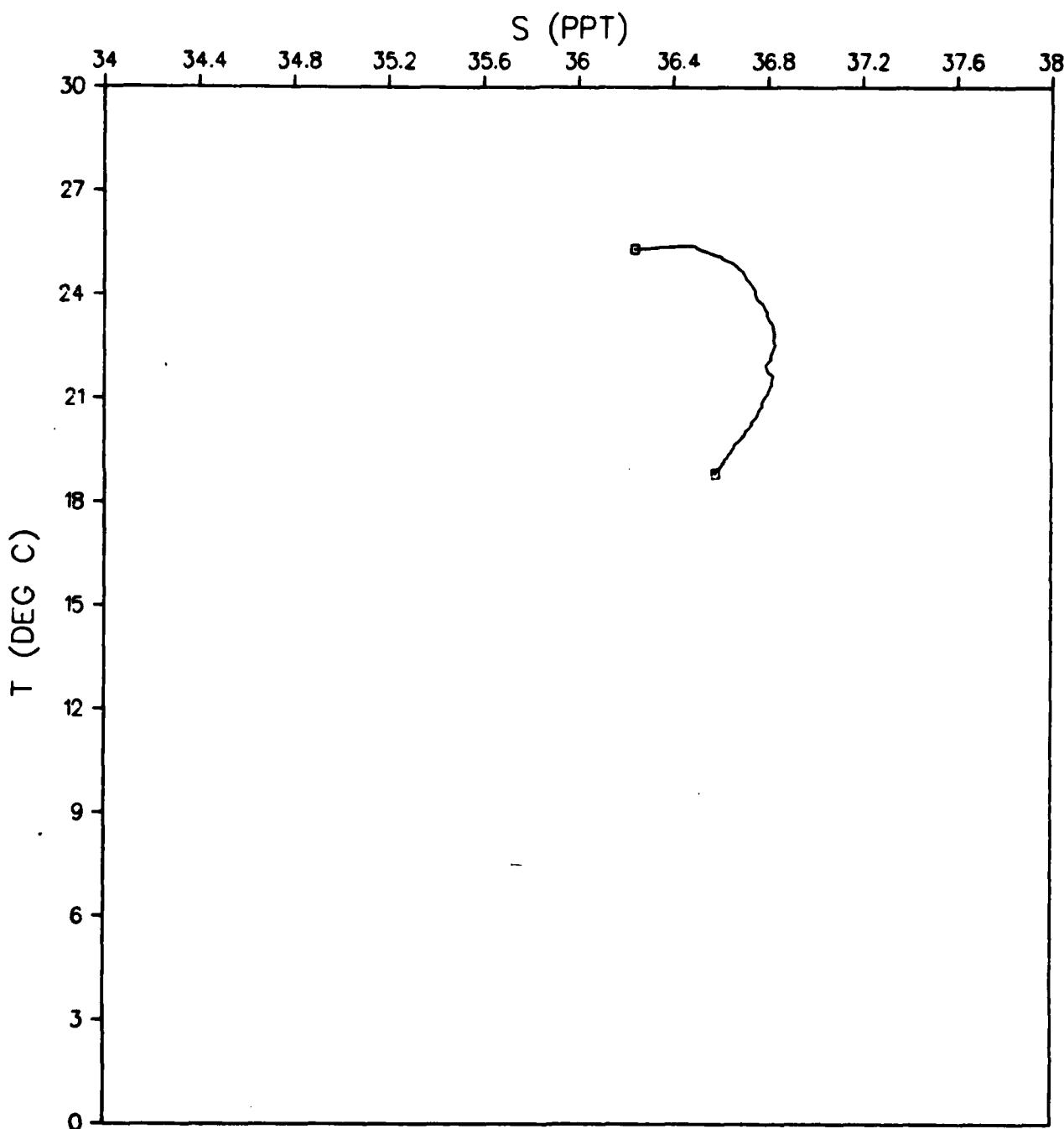


Figure 464.

ATOM 79 RECOVERY
STATION 200016

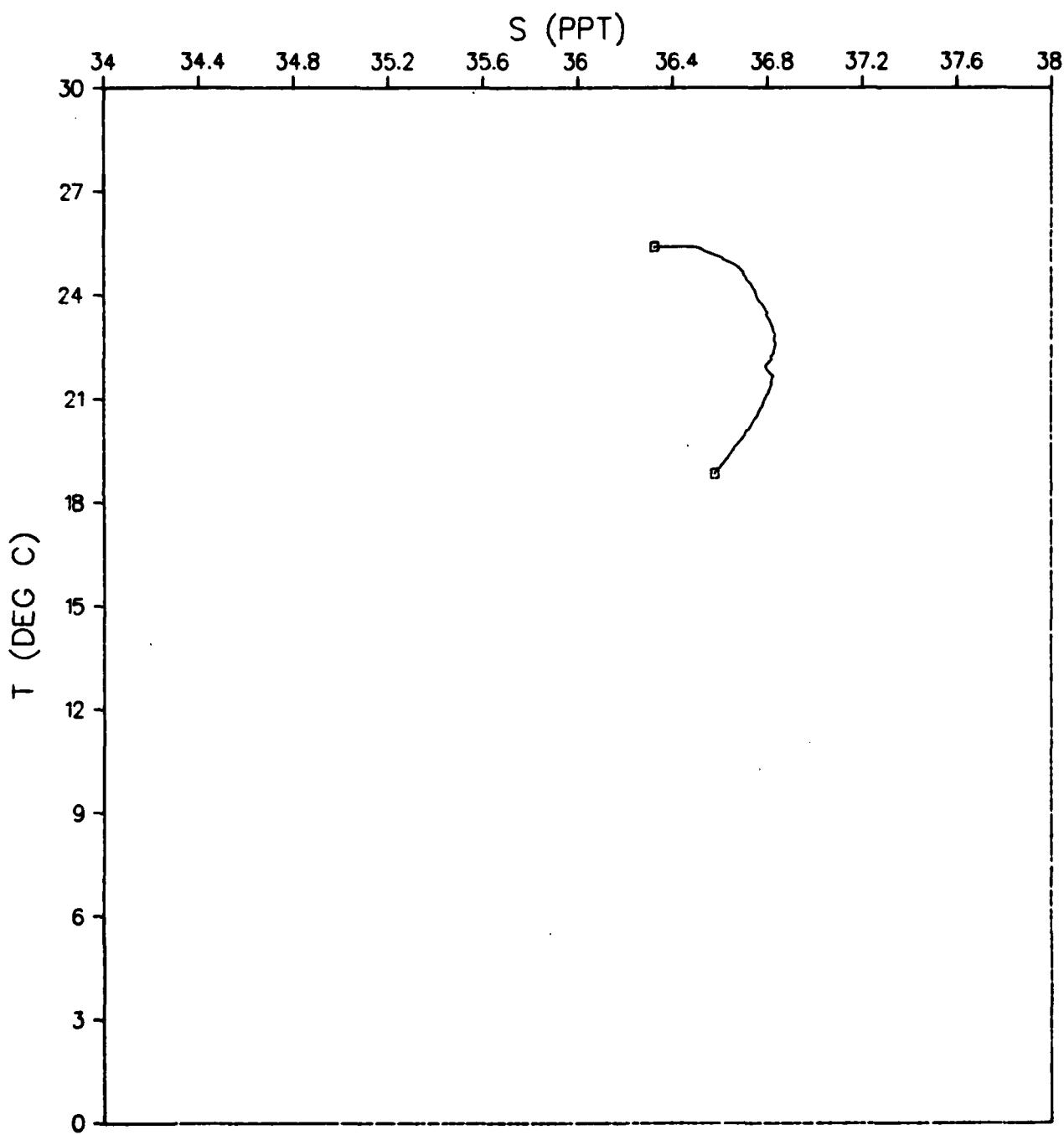


Figure 465.

ATOM 79 RECOVERY
STATION 200017

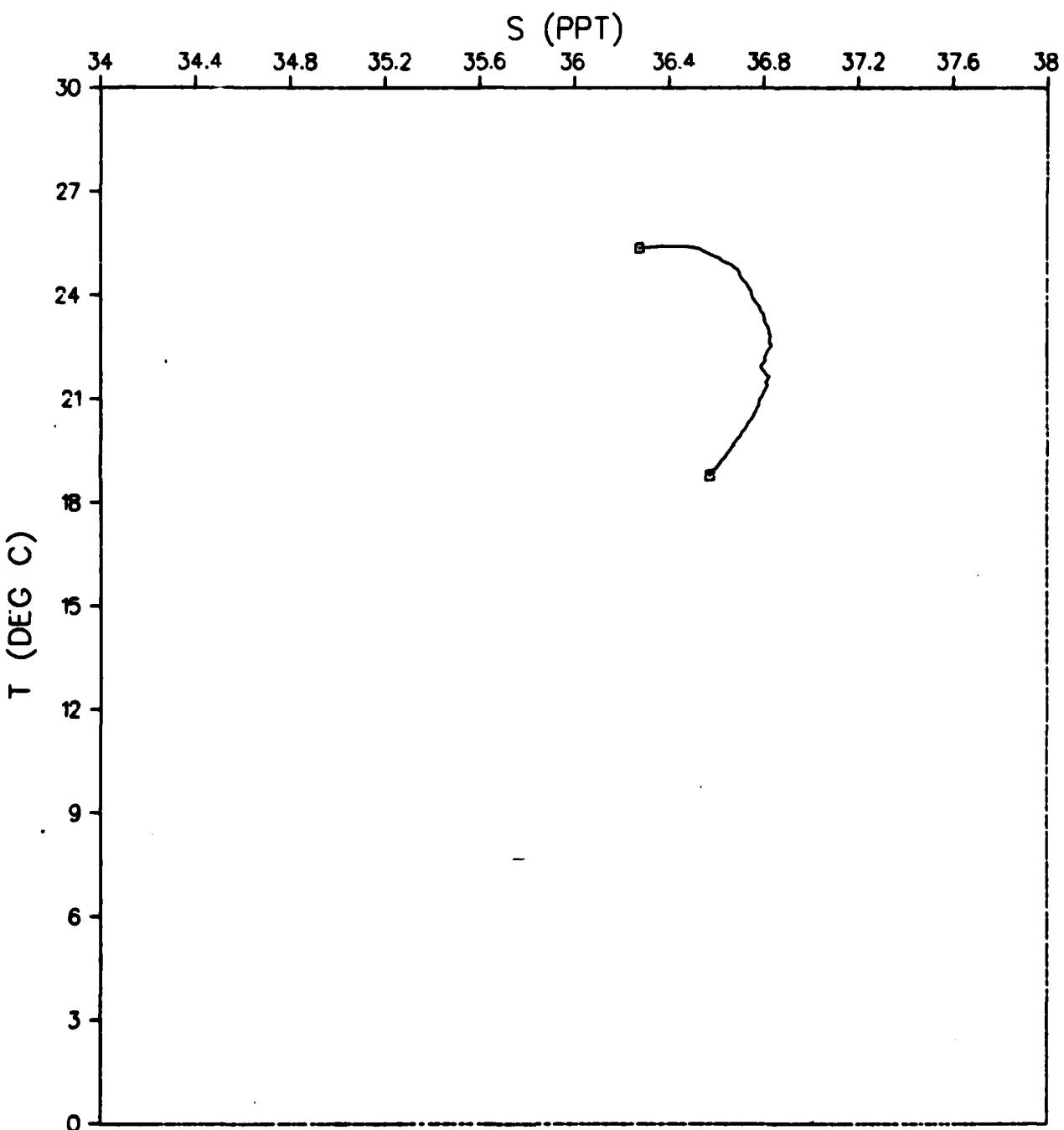


Figure 466.

ATOM 79 RECOVERY
STATION 200018

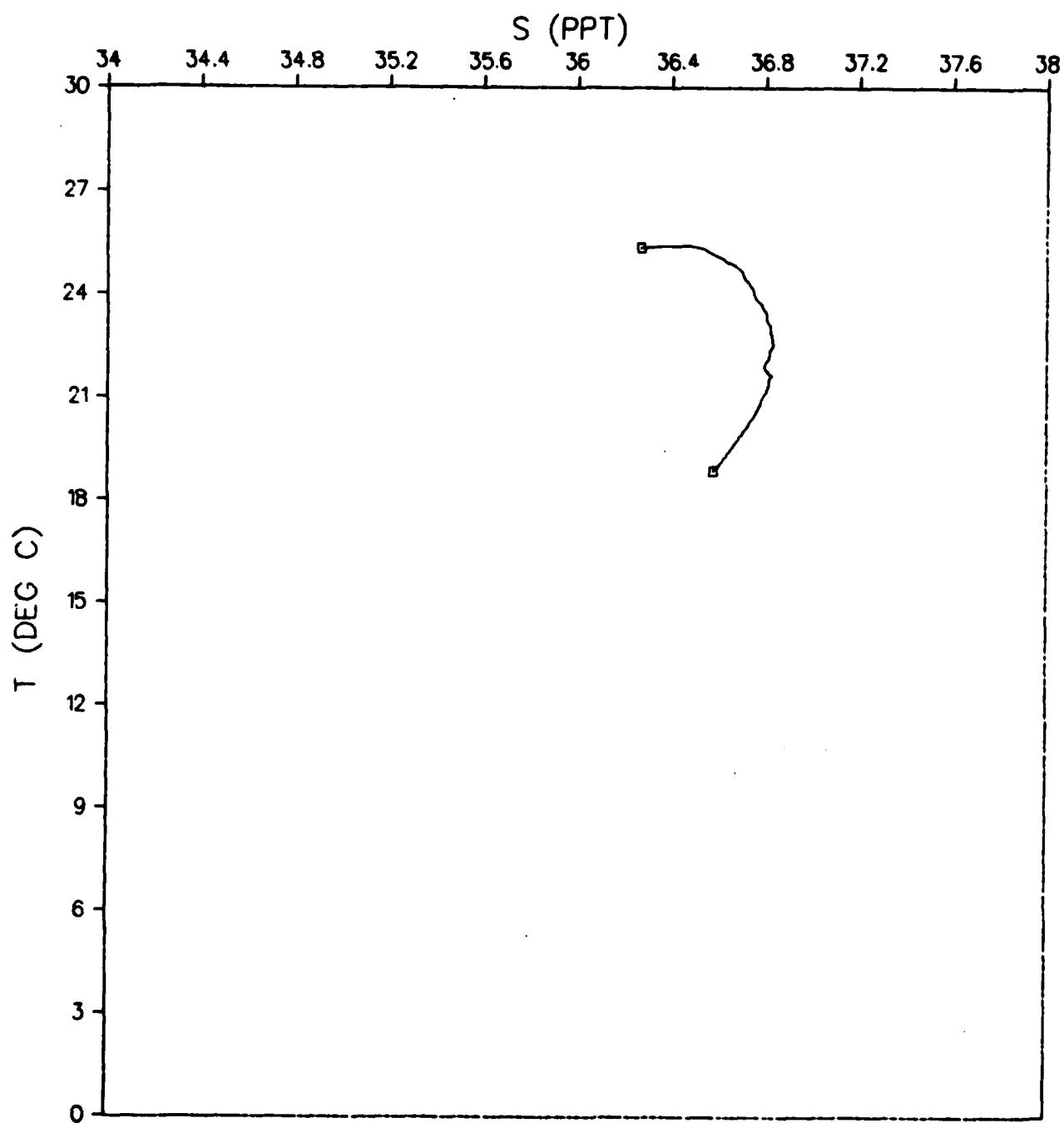


Figure 467.

ATOM 79 RECOVERY
STATION 200019

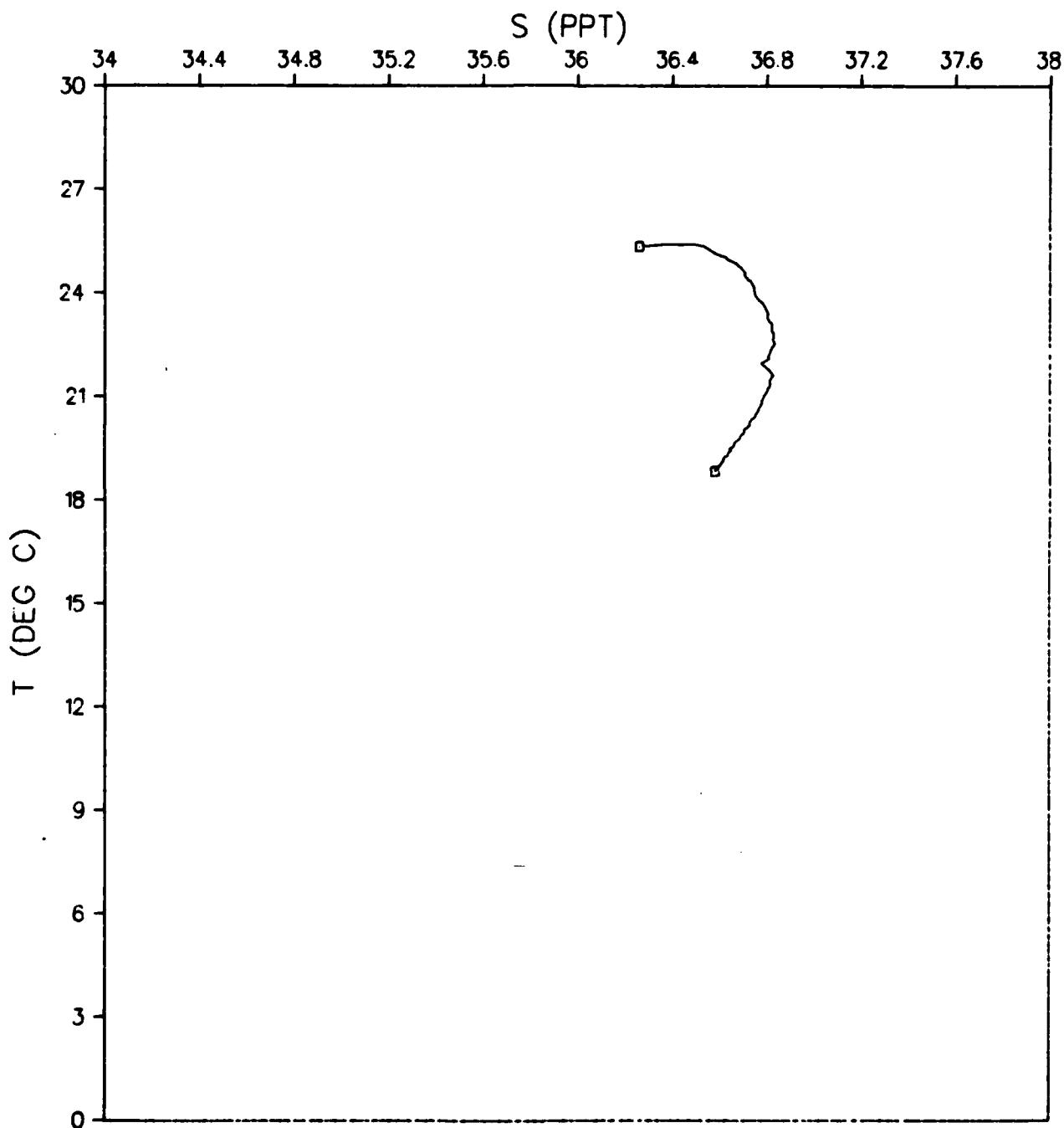


Figure 468.

ATOM 79 RECOVERY
STATION 200020

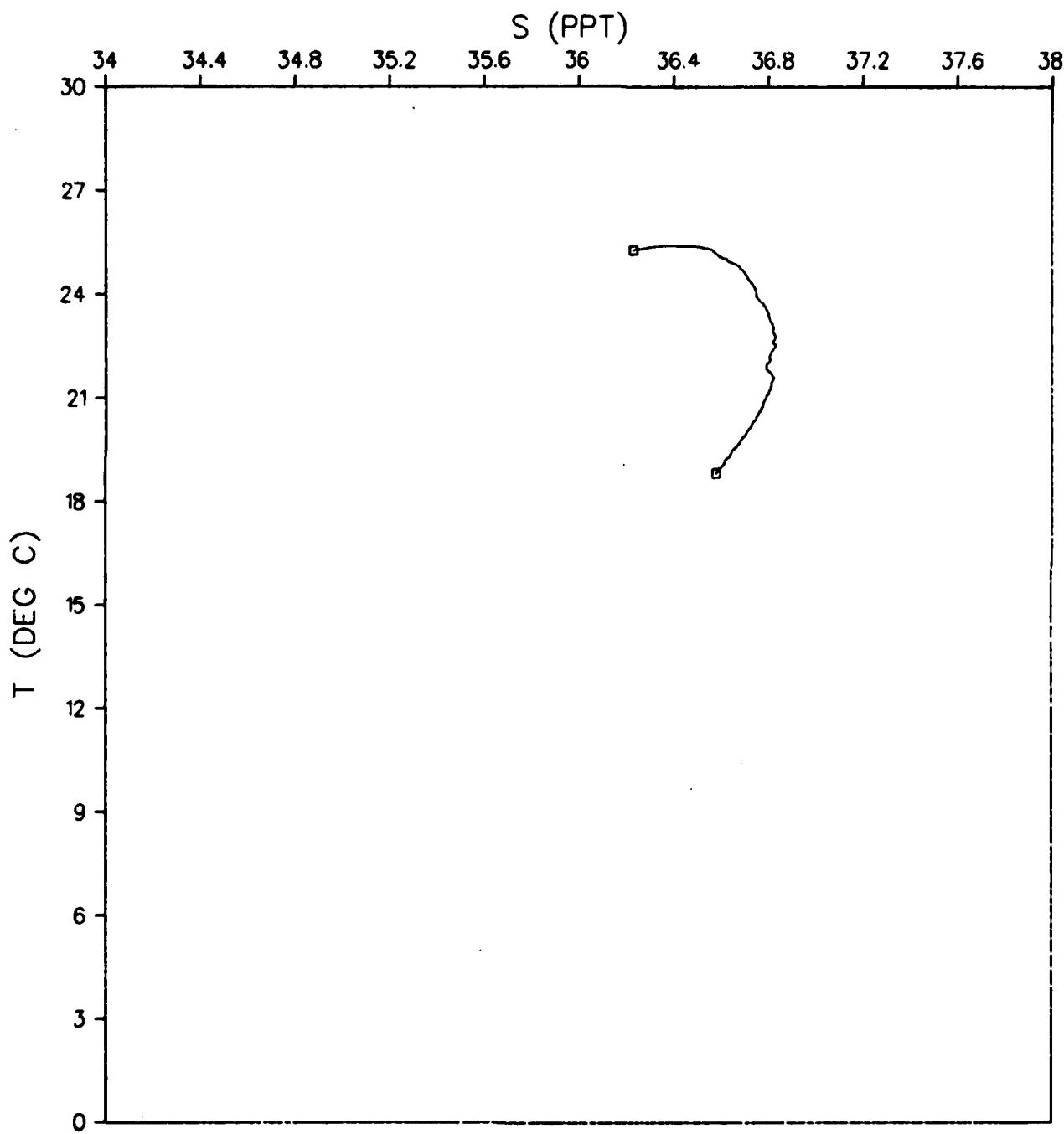


Figure 469.

ATOM 79 RECOVERY
STATION 200021

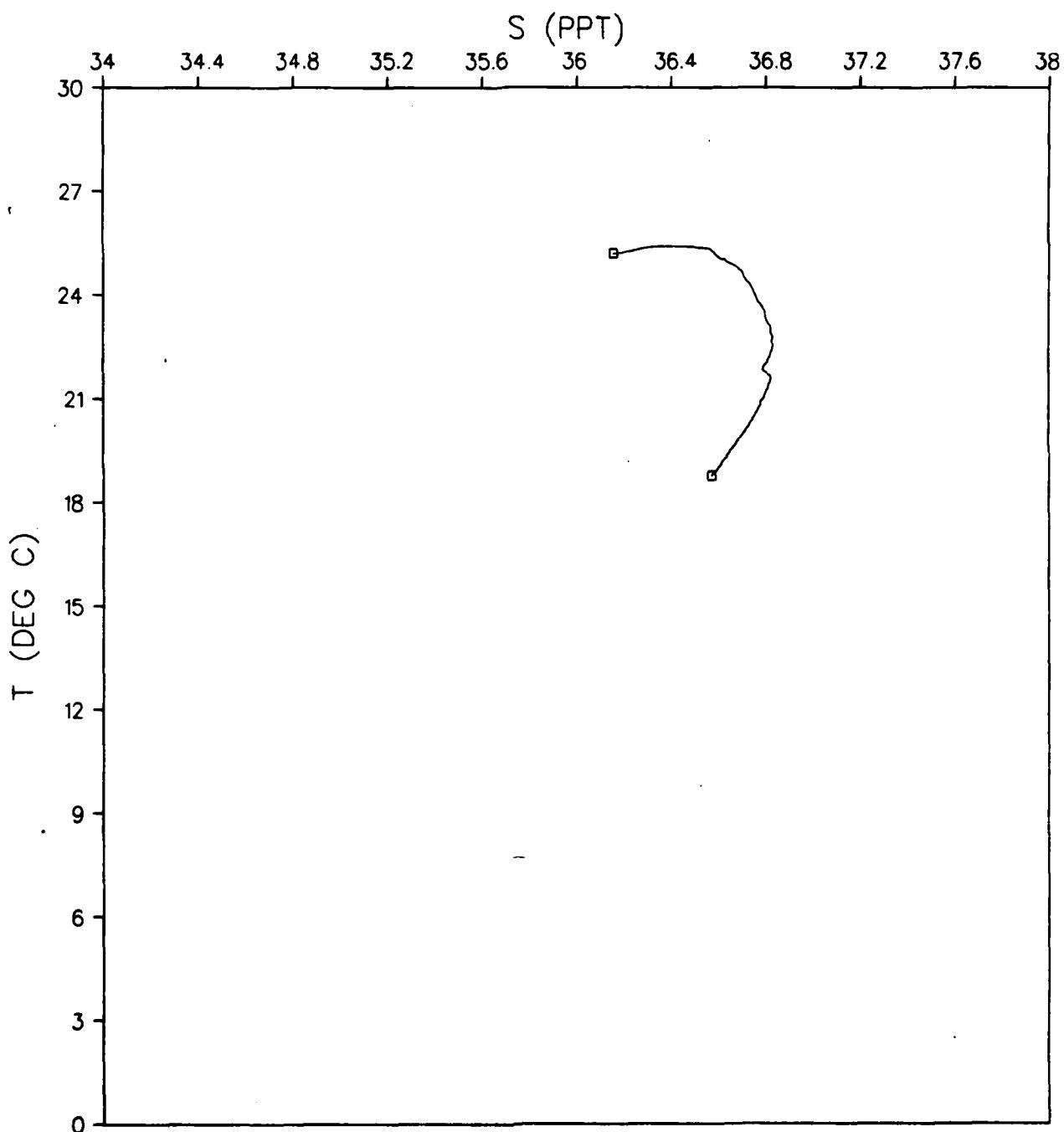


Figure 470.

ATOM 79 RECOVERY
STATION 200022

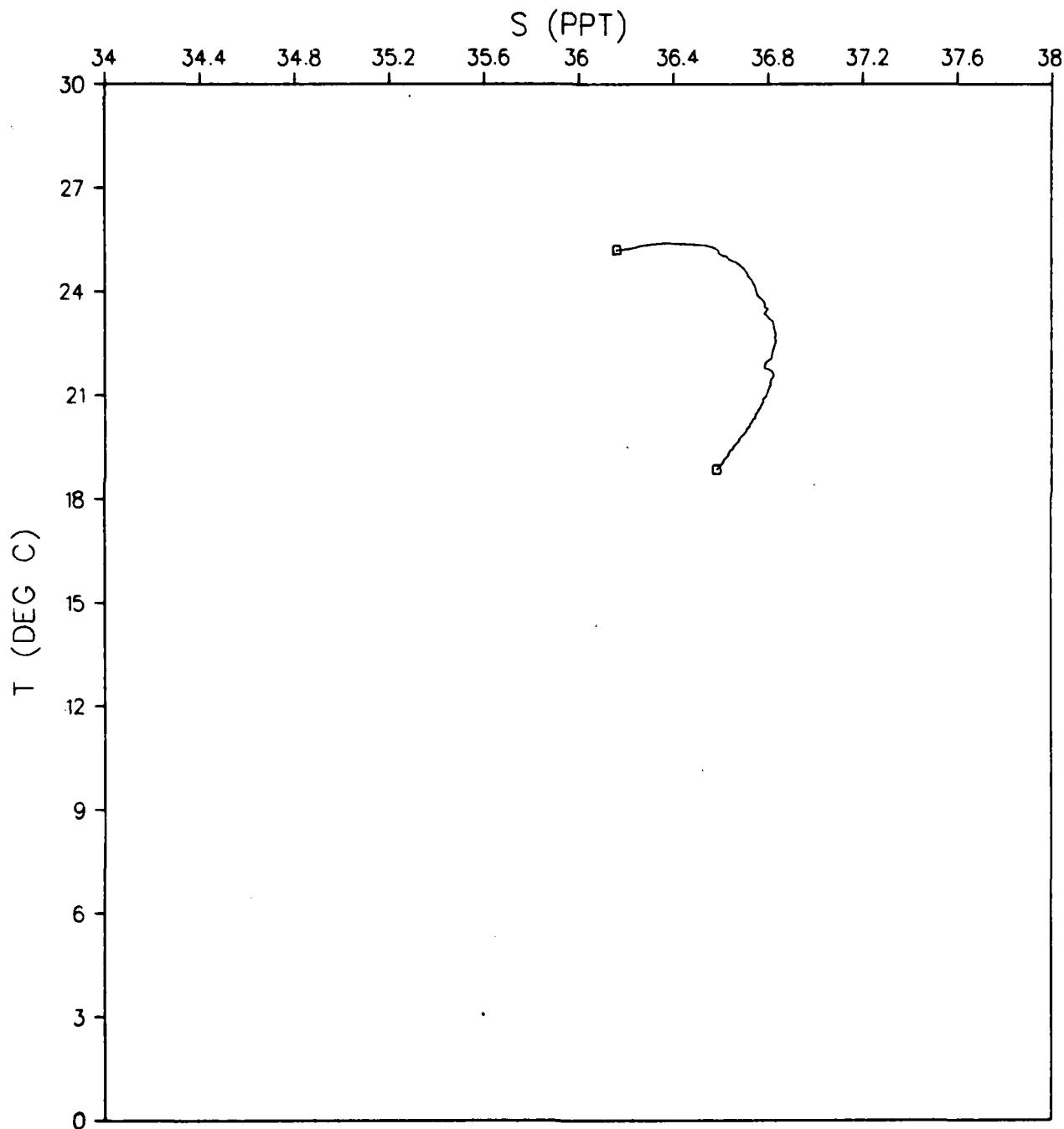


Figure 471.

ATOM 79 RECOVERY
STATION 200023

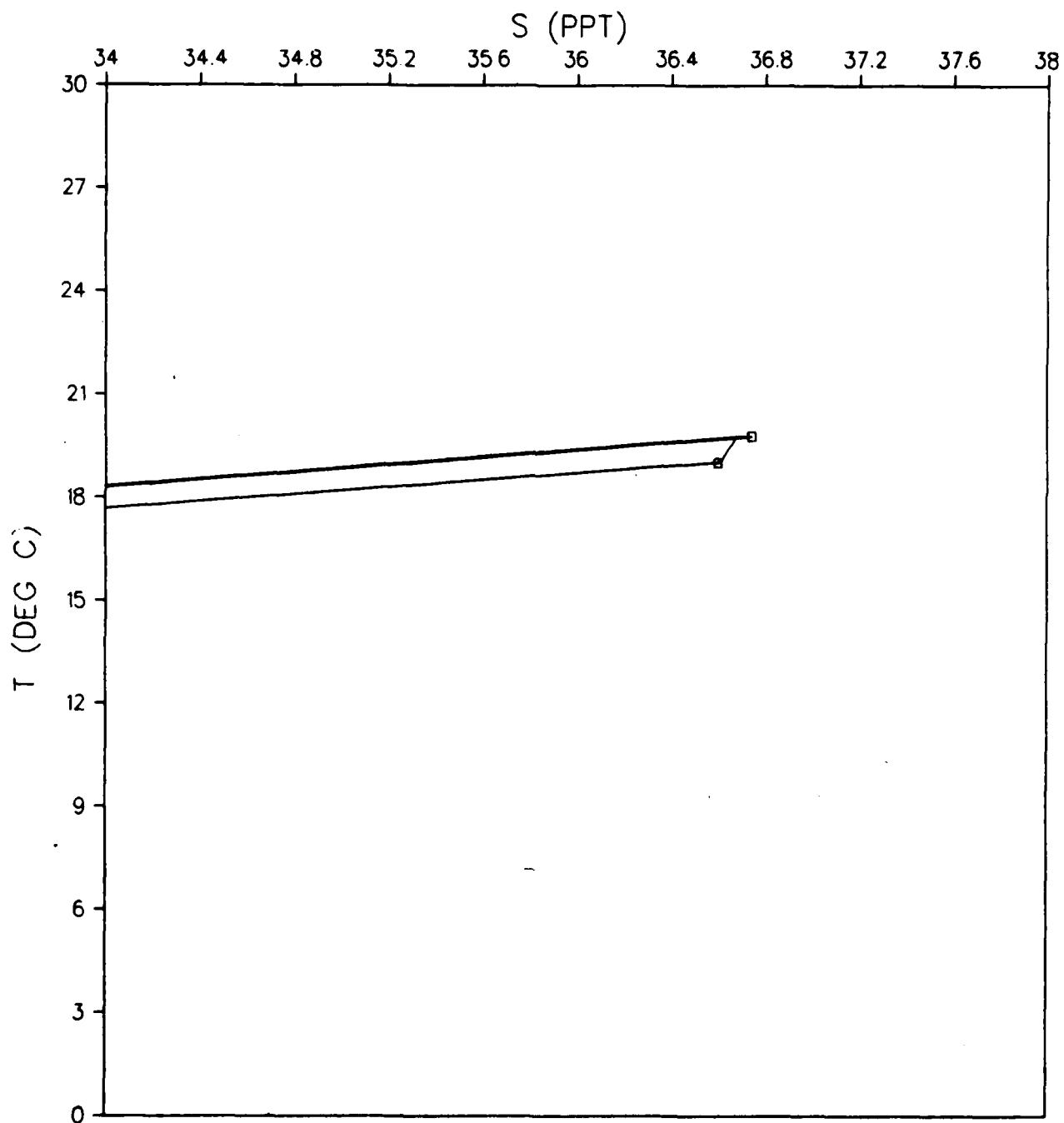


Figure 472.

ATOM 79 RECOVERY
STATION 200024

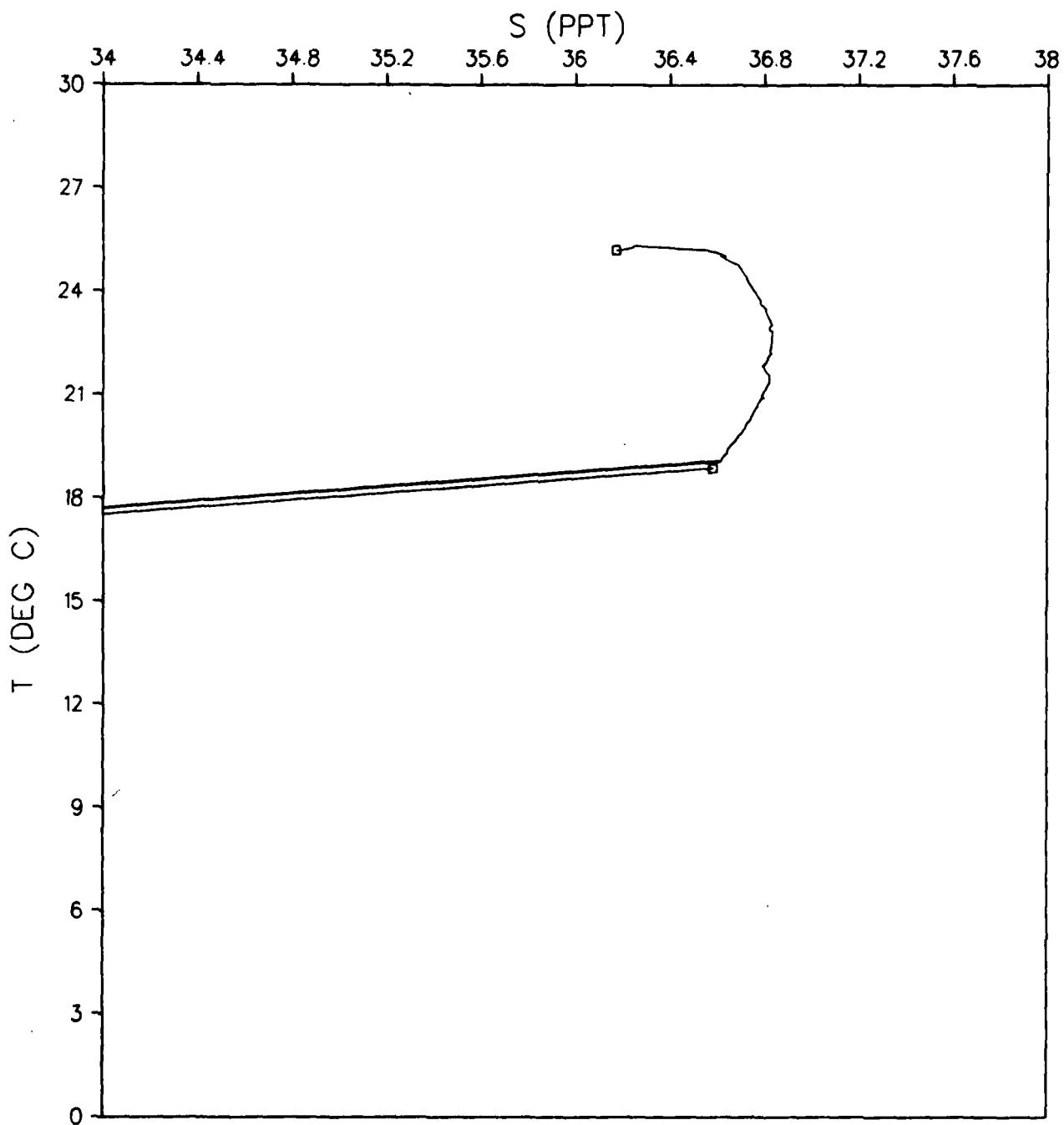


Figure 473.

ATOM 79 RECOVERY
STATION 200025

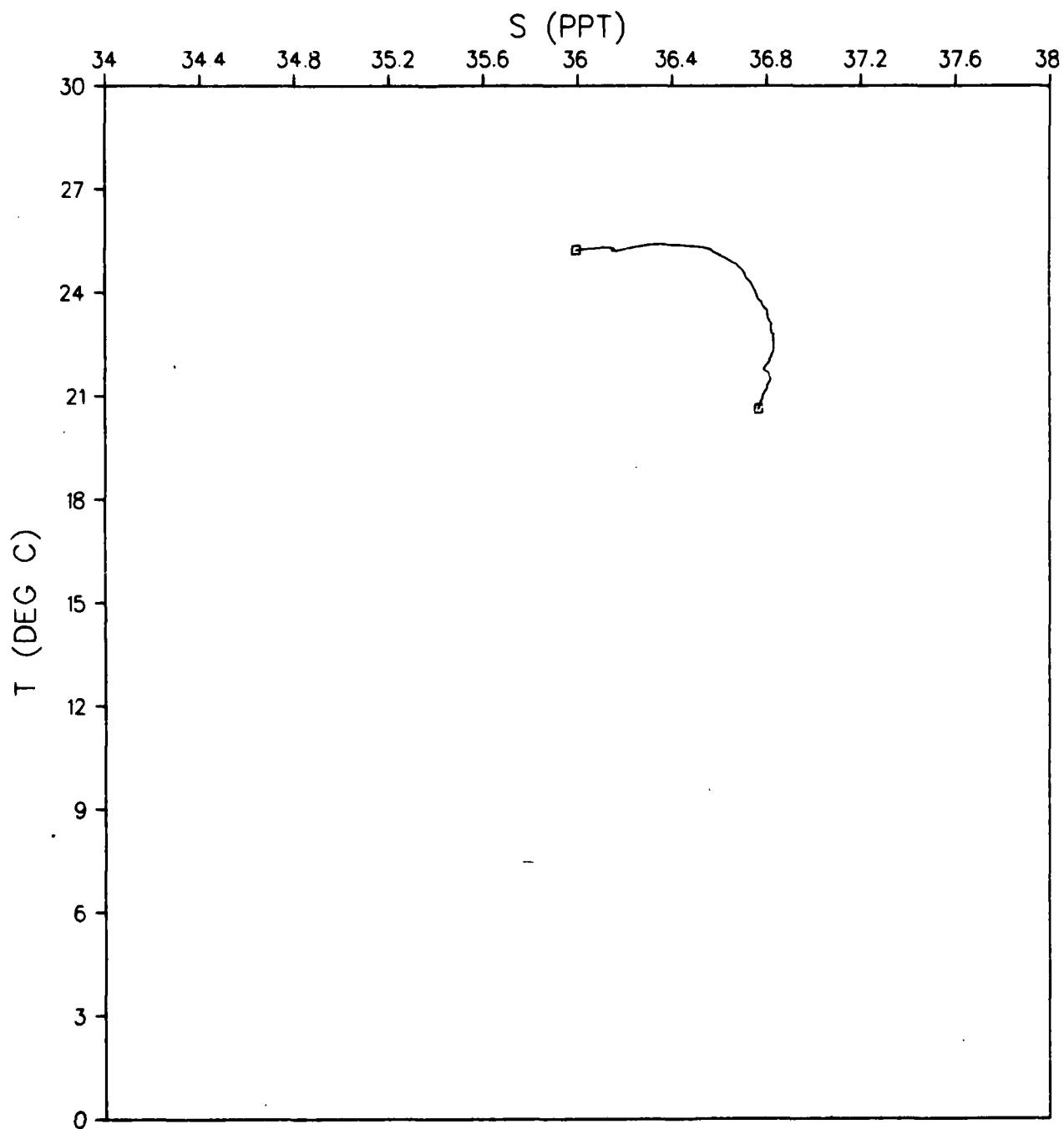


Figure 474.

ATOM 79 RECOVERY
STATION 200026

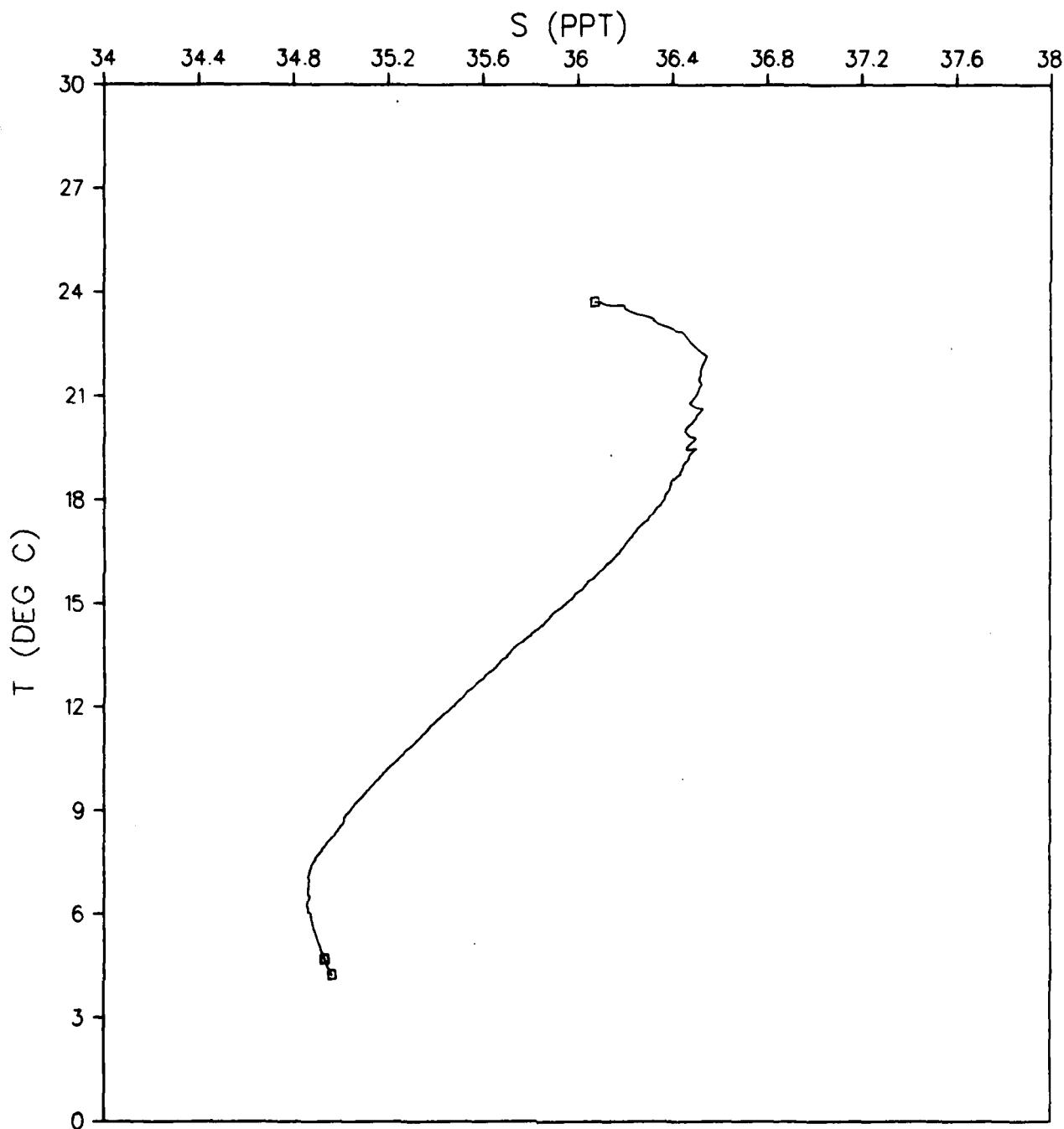


Figure 475.

ATOM 79 RECOVERY
STATION 200027

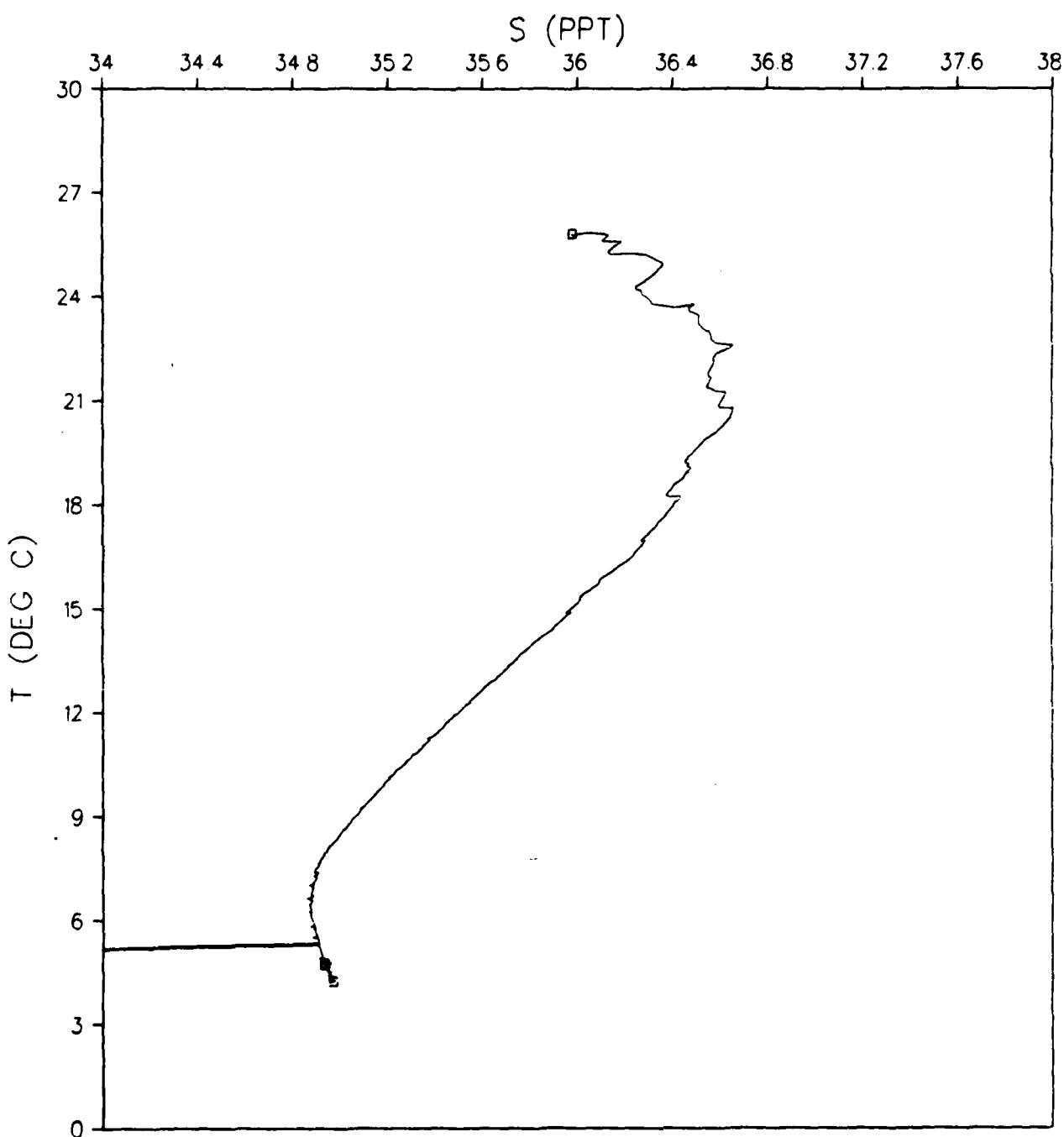


Figure 476.

ATOM 79 RECOVERY
STATION 200028

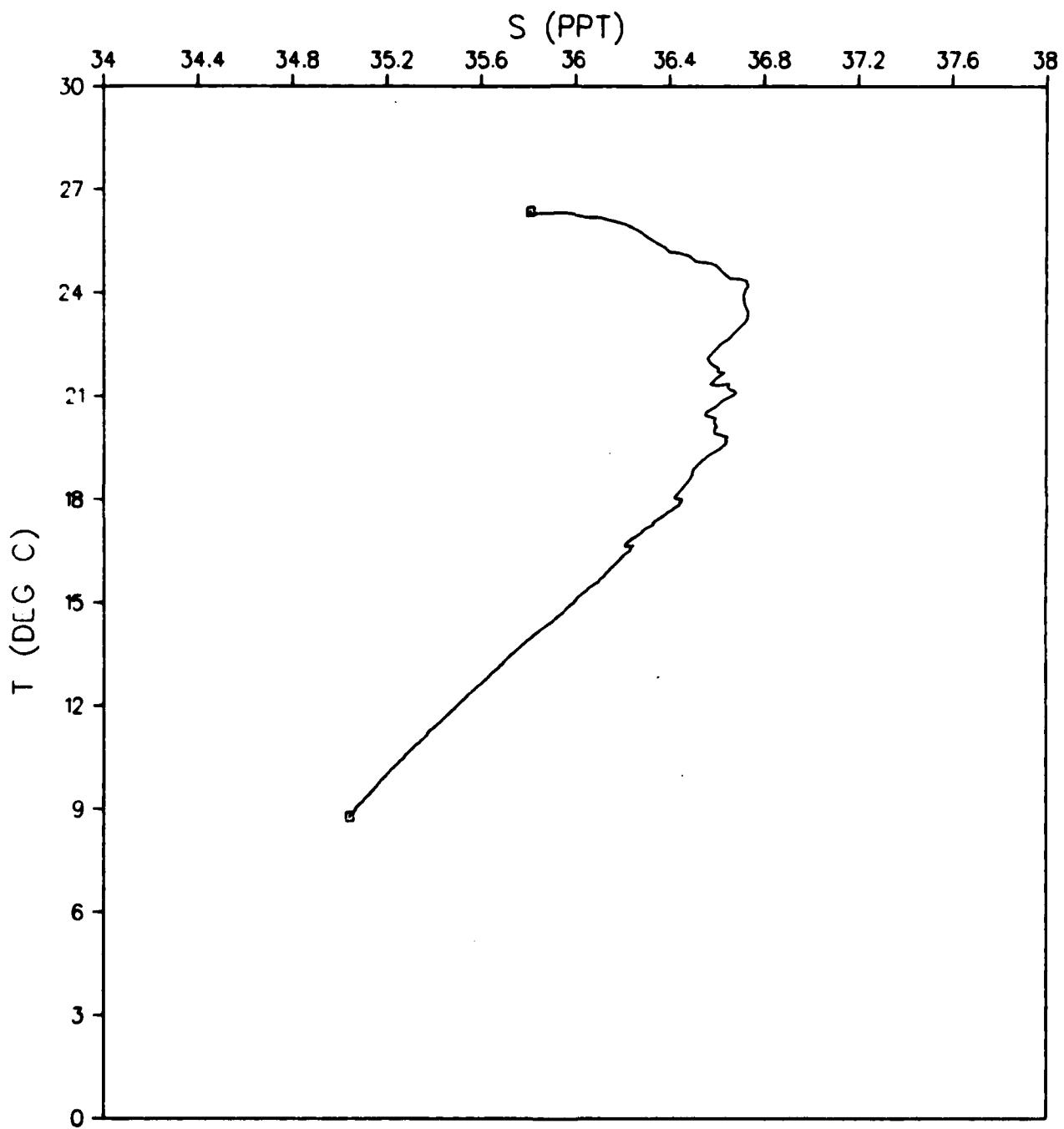


Figure 477.

ATOM 79 RECOVERY
STATION 200029

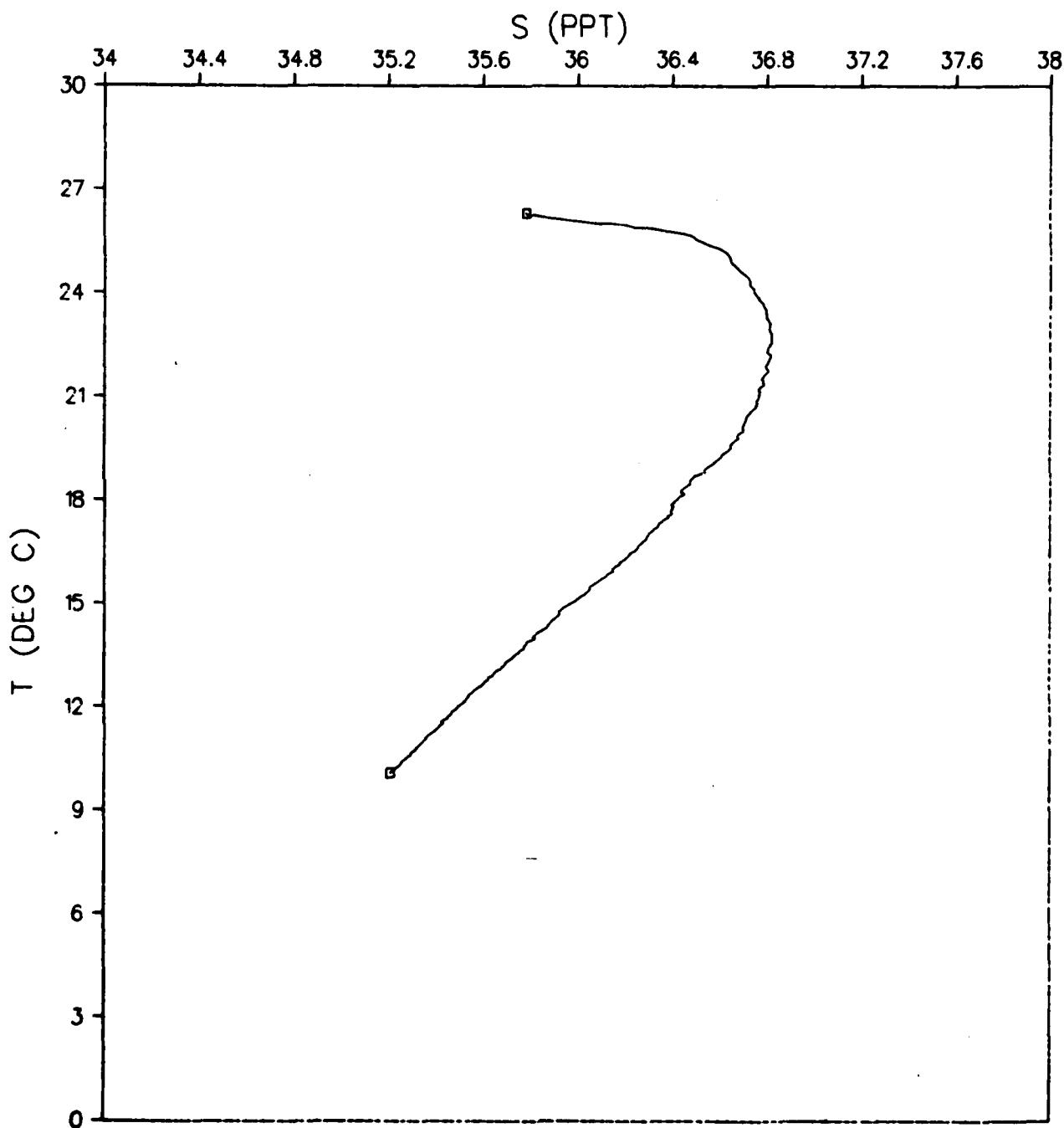


Figure 478.

ATOM 79 RECOVERY
STATION 200030

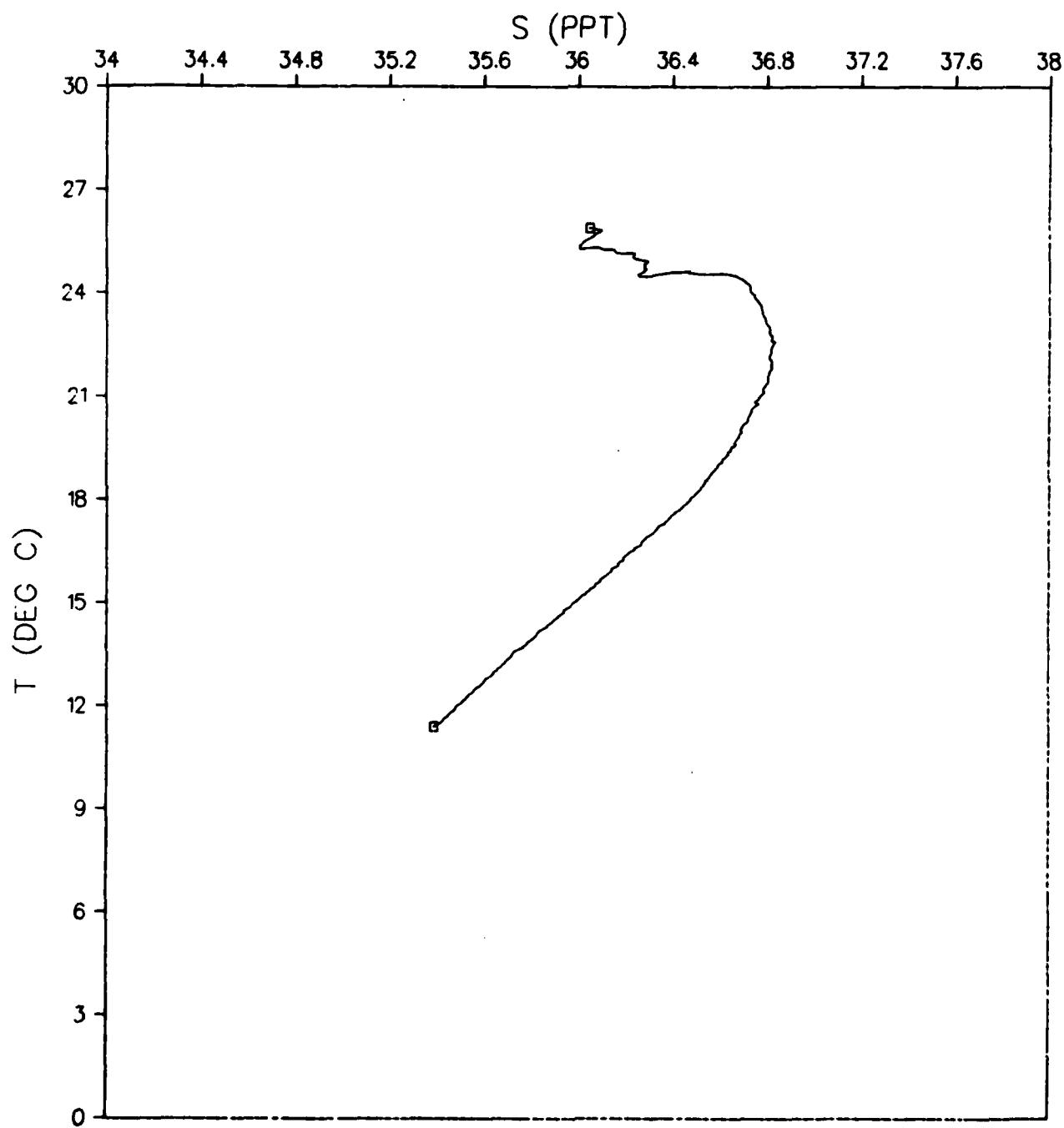


Figure 479.

ATOM 79 RECOVERY
STATION 200031

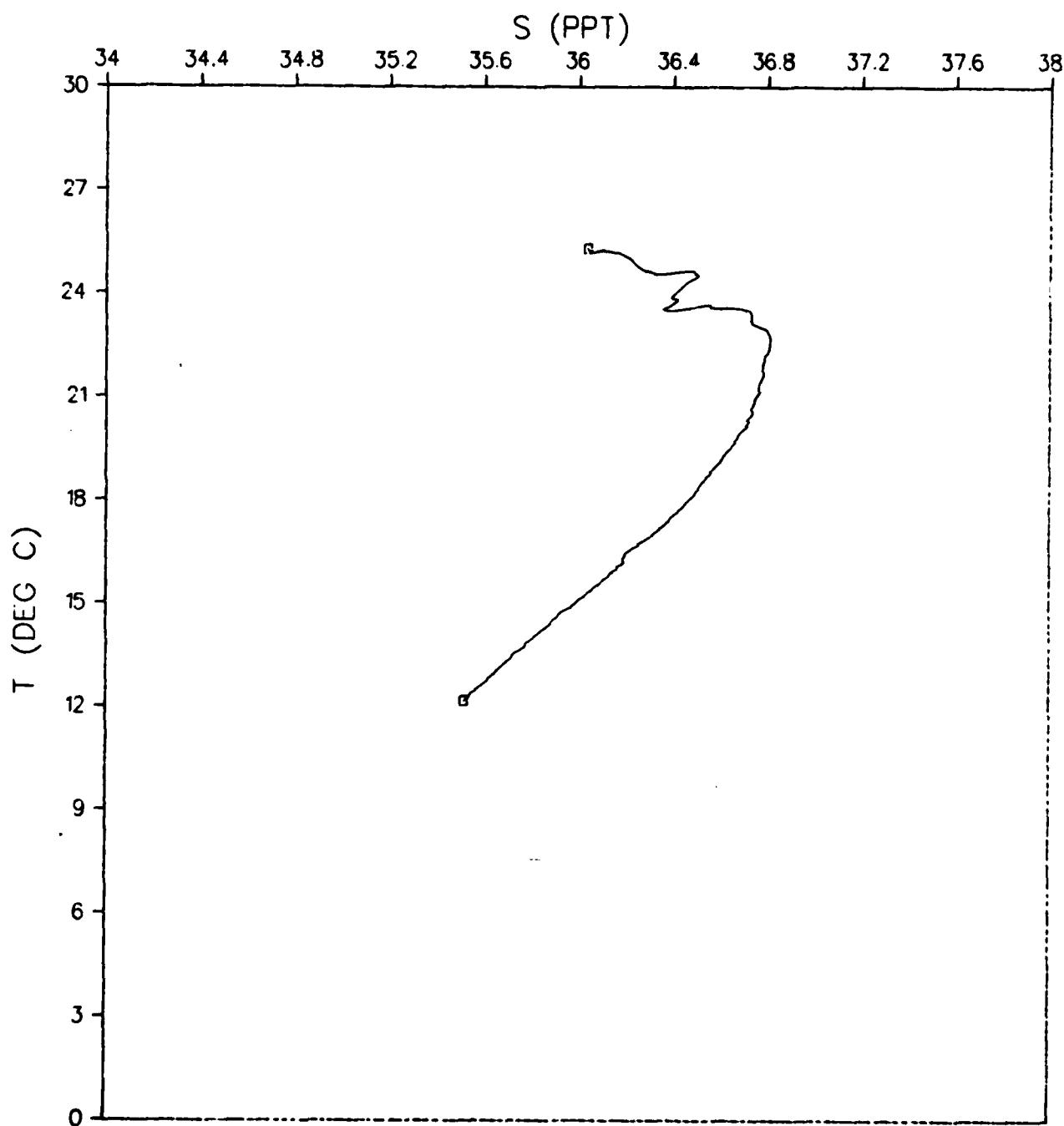


Figure 480.

ATOM 79 RECOVERY
STATION 200032

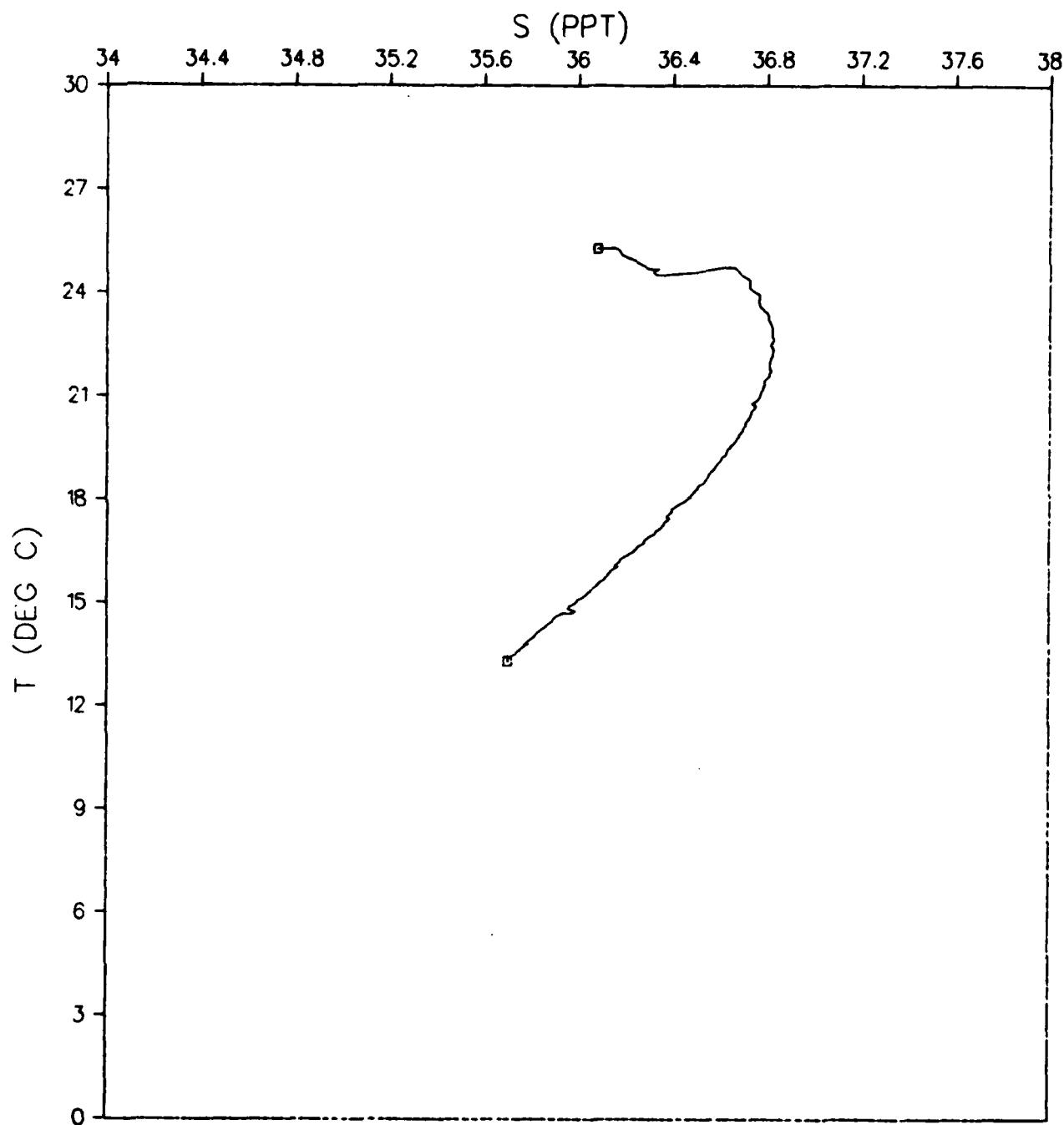


Figure 481.

ATOM 79 RECOVERY
STATION 200033

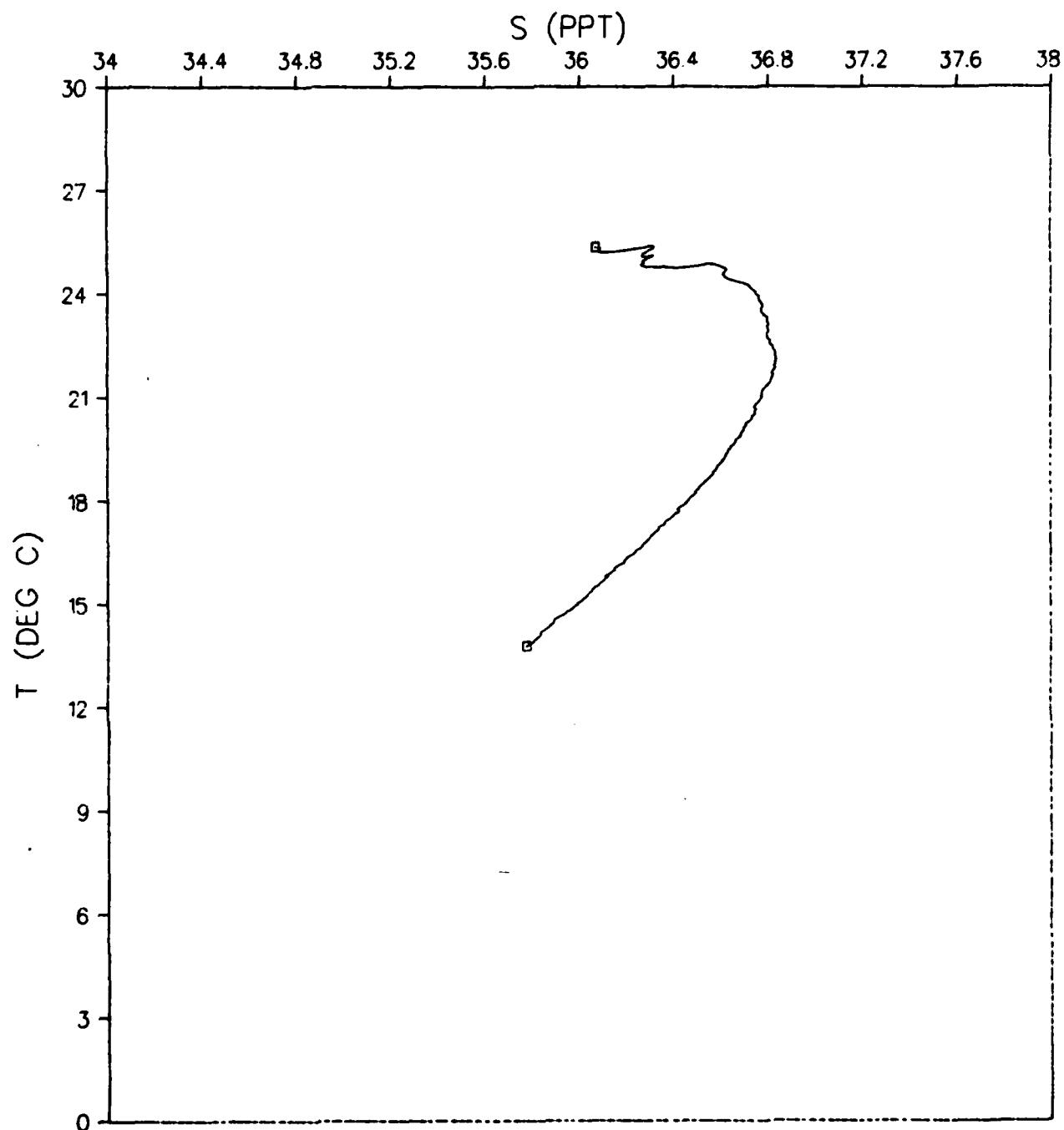


Figure 482.

ATOM 79 RECOVERY
STATION 200034

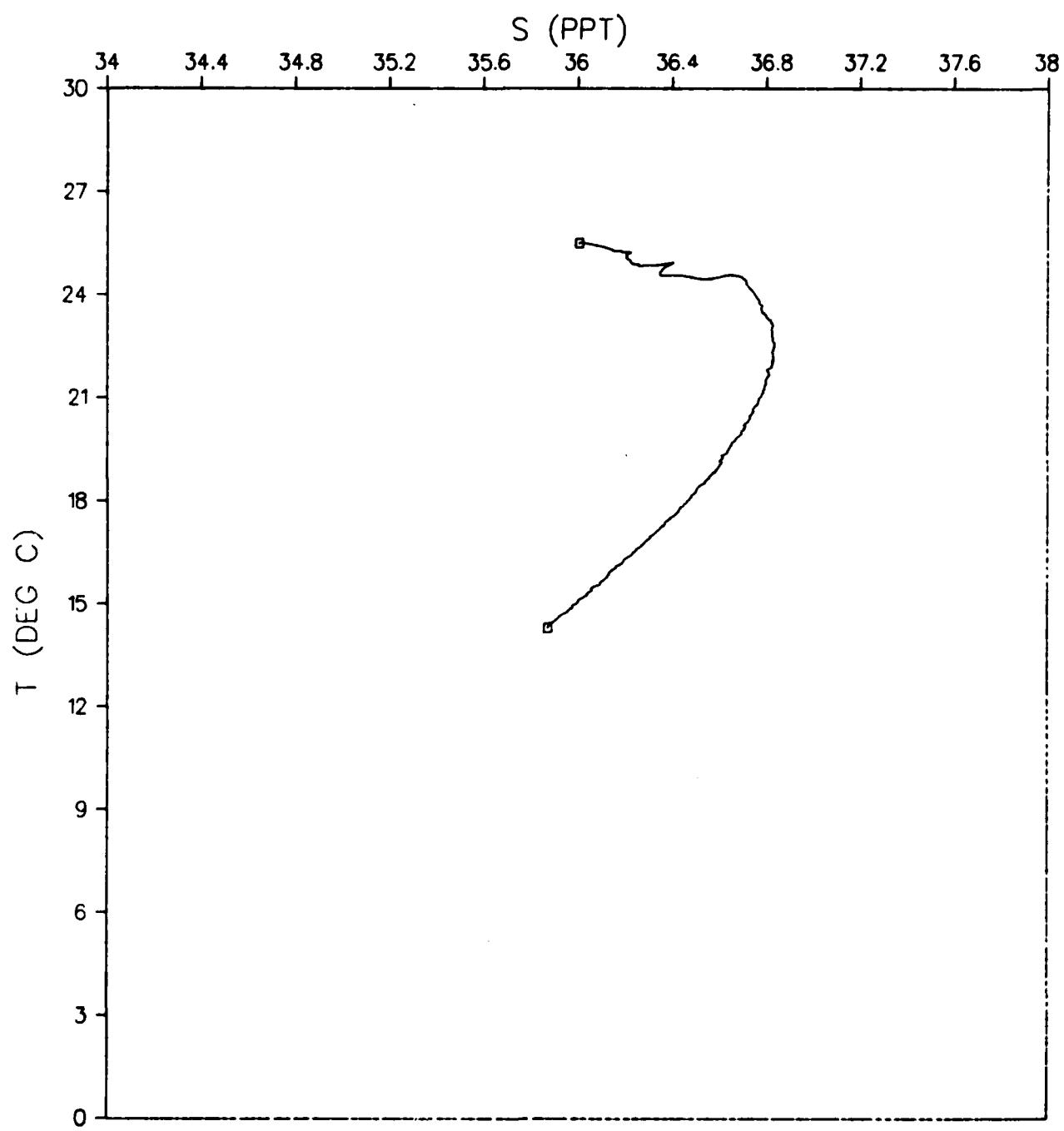


Figure 483.

ATOM 79 RECOVERY
STATION 200035

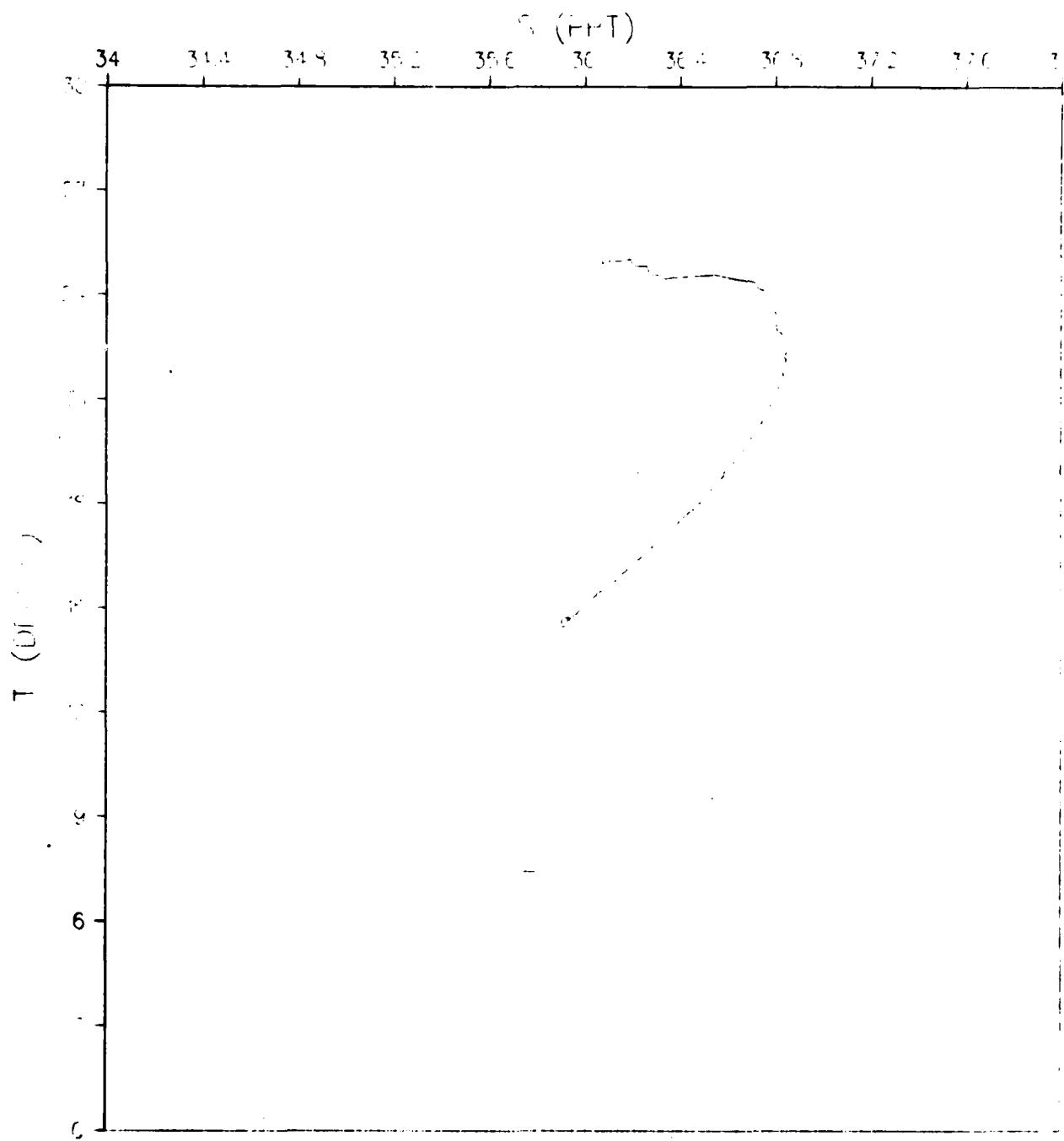


Figure 484.

ATOM 79 RECOVERY
STATION 200036

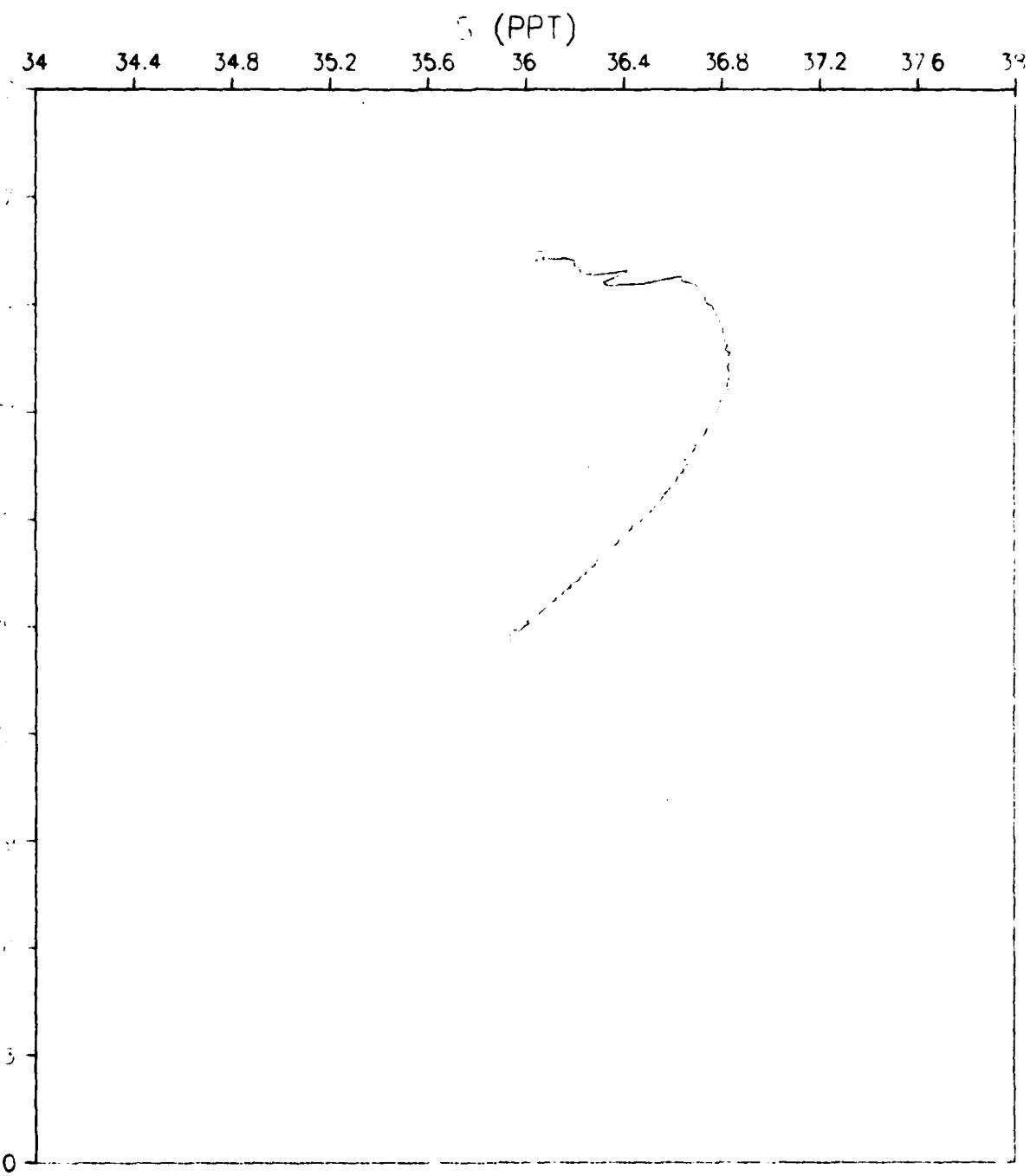


Figure 485.

ATOM 79 RECOVERY
STATION 200037

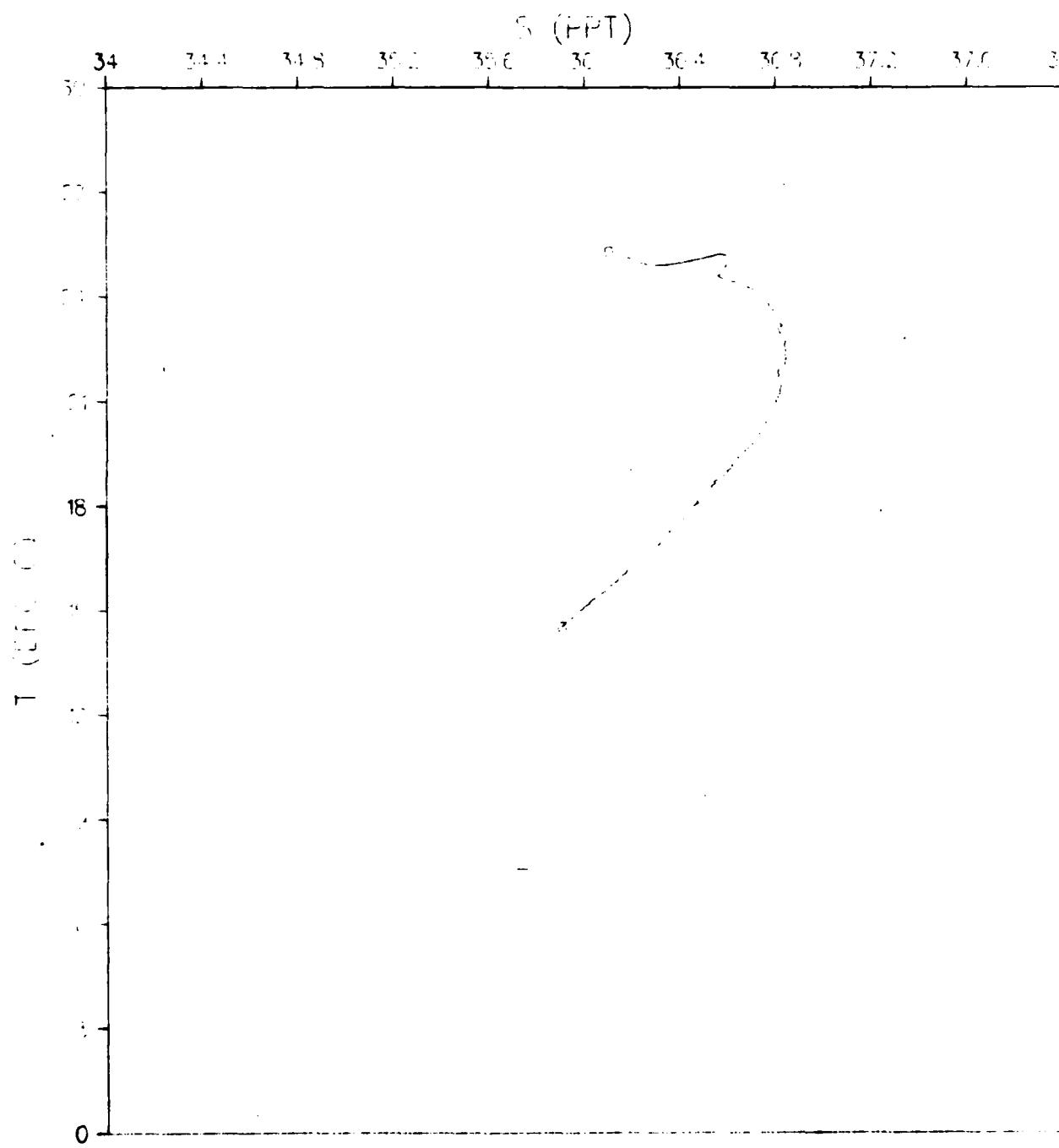


Figure 486.

ATOM 79 RECOVERY
STATION 200038

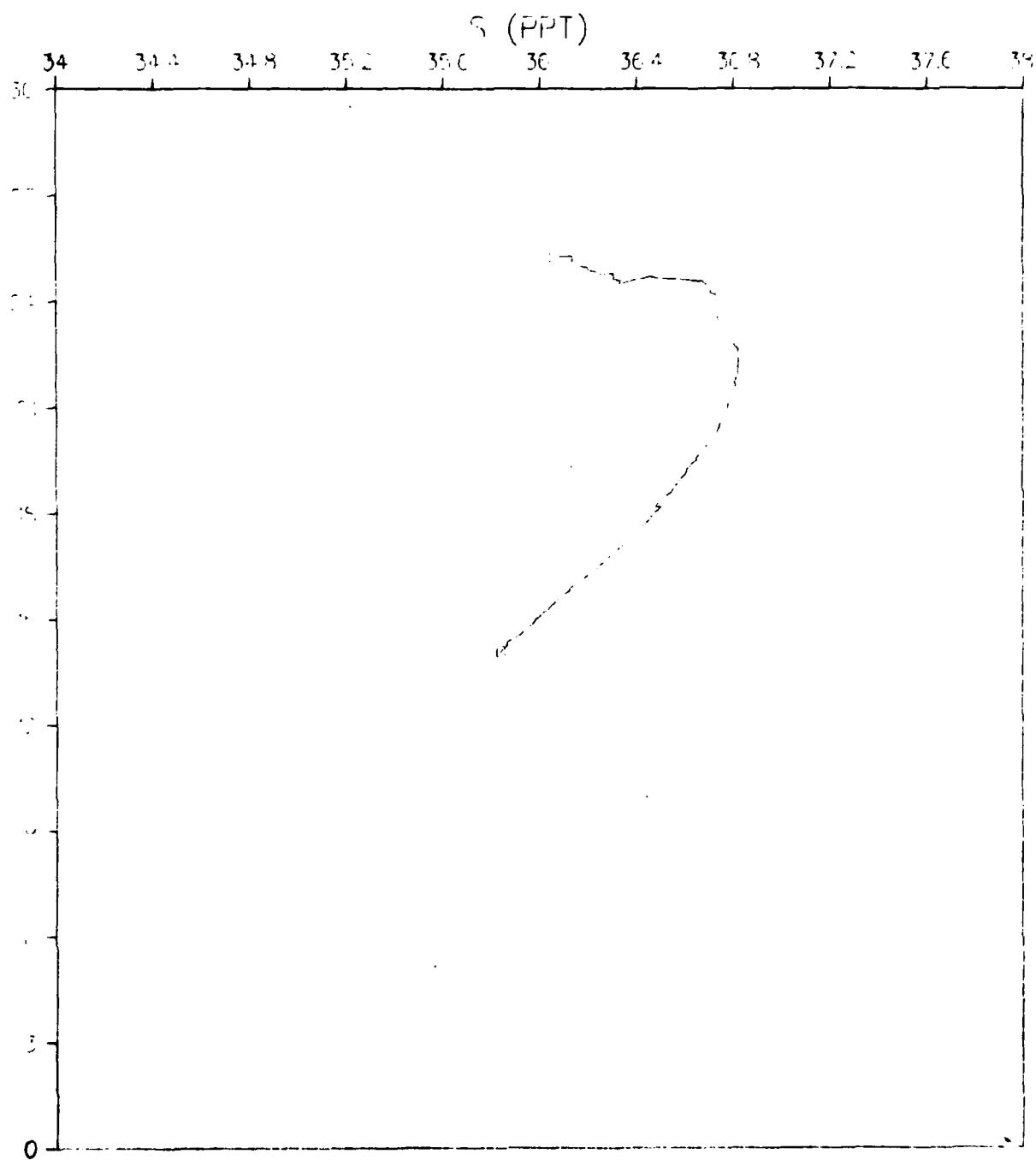


Figure 487.

ATOM 79 RECOVERY
STATION 200039

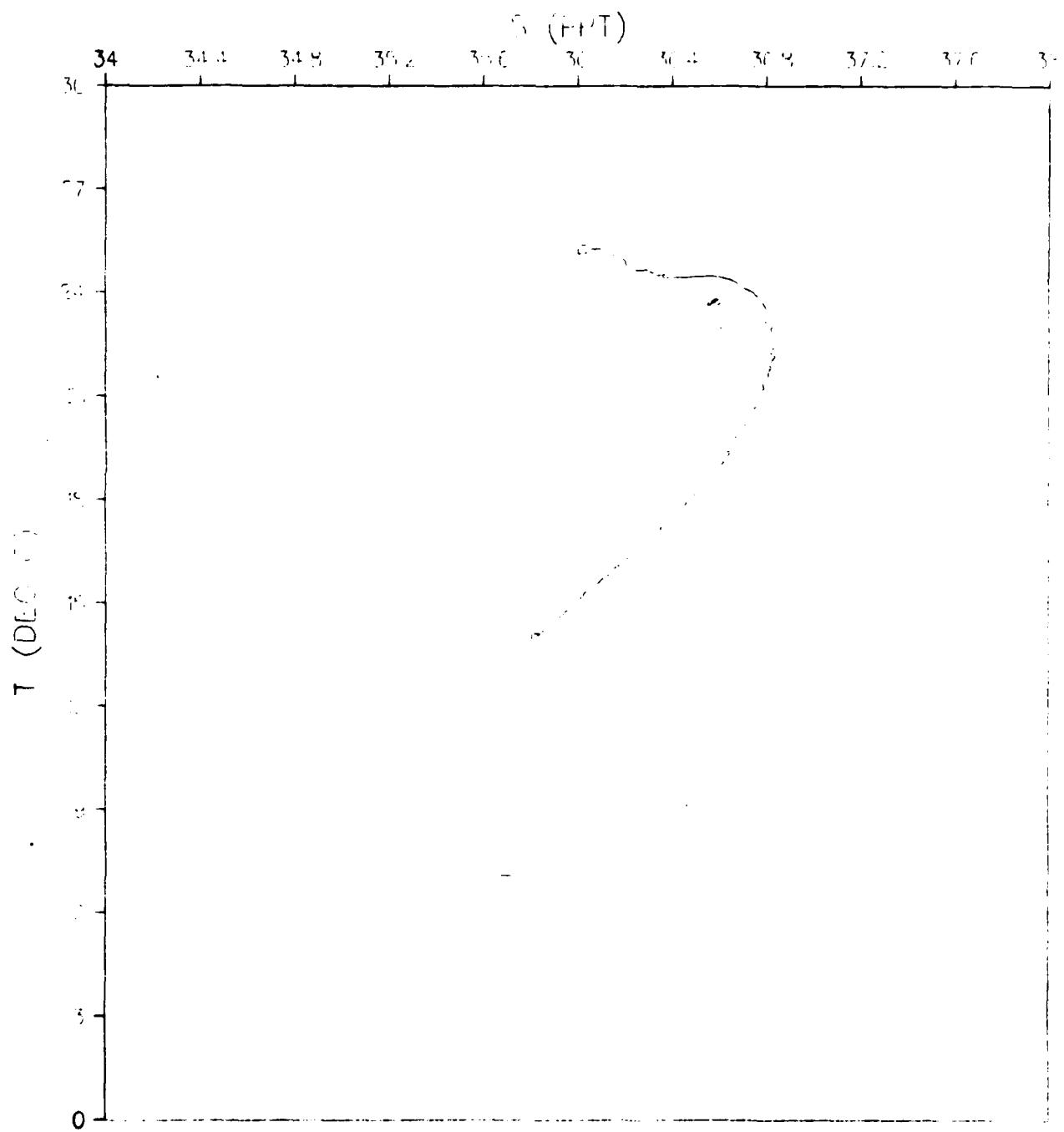


Figure 488.

ATOM 79 RECOVERY
STATION 200040

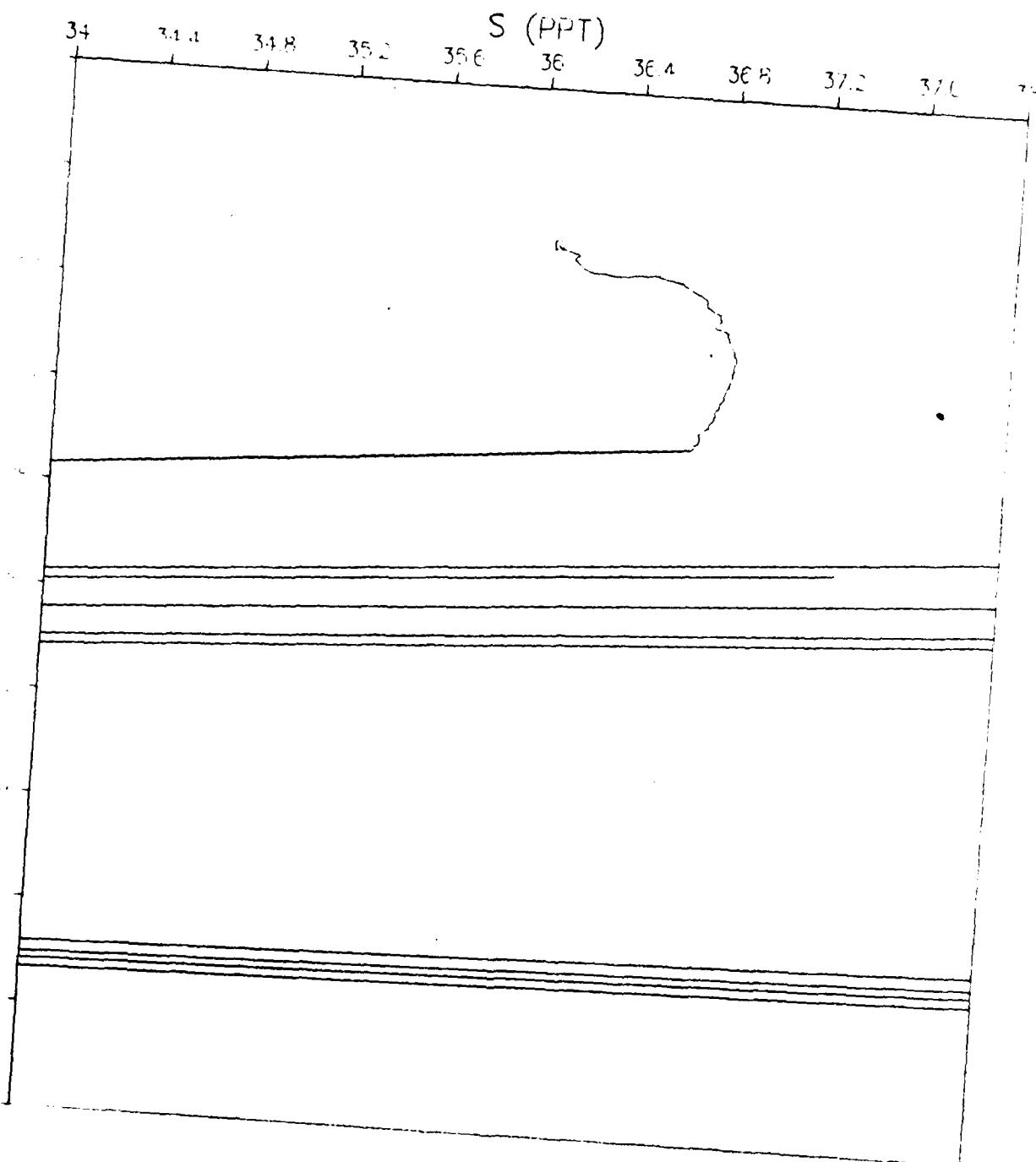


Figure 489,

ATOM 79 RECOVERY
STATION 200041

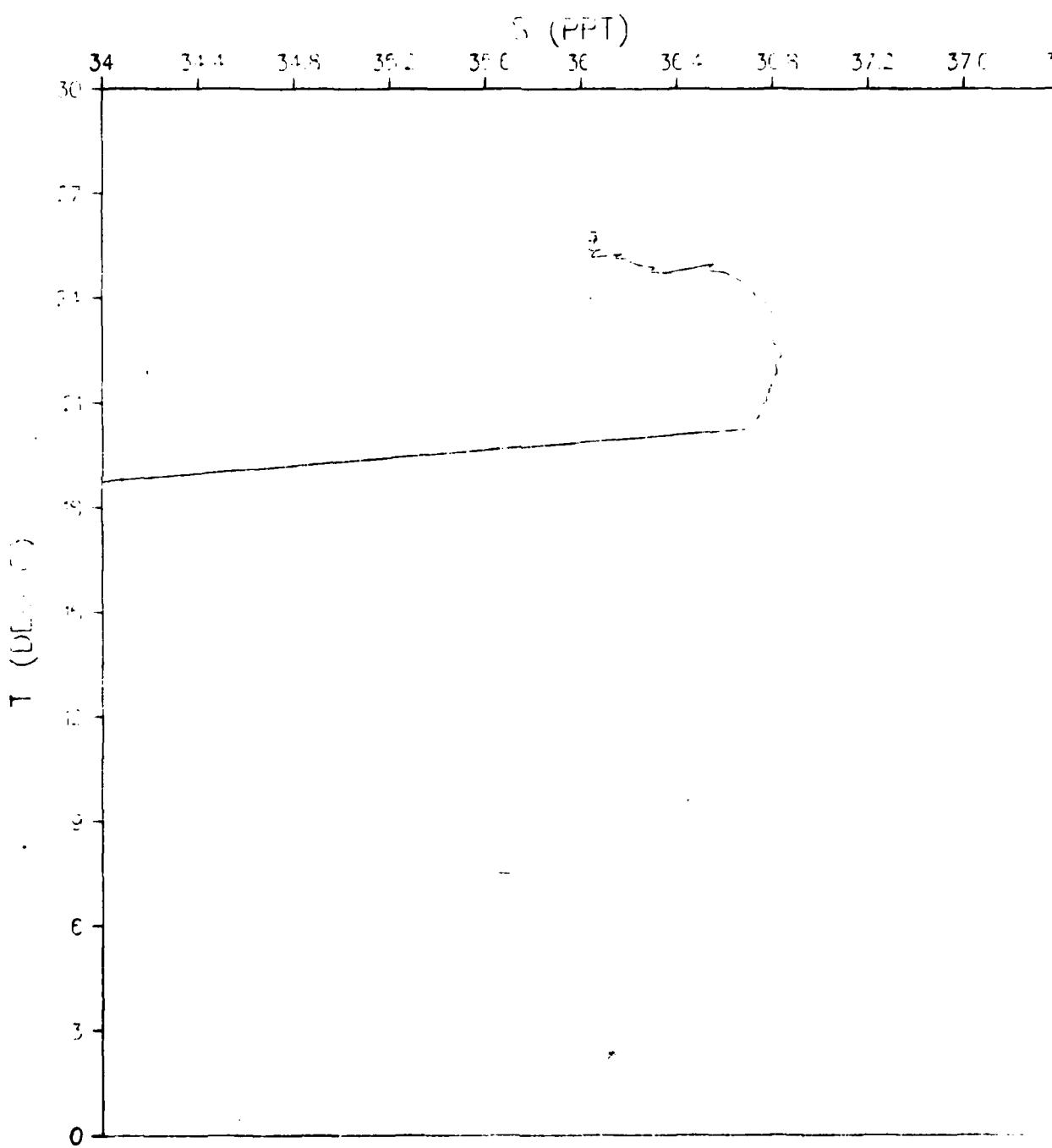


Figure 490.

5.0 METEROLOGICAL DATA

5.1 Plots of Temperature (Air and Sea), Barometric Pressure, Wind Speed,
Wind Direction, Wave Height and Direction at the NOAA Data Buoys
(Figures 491-500)

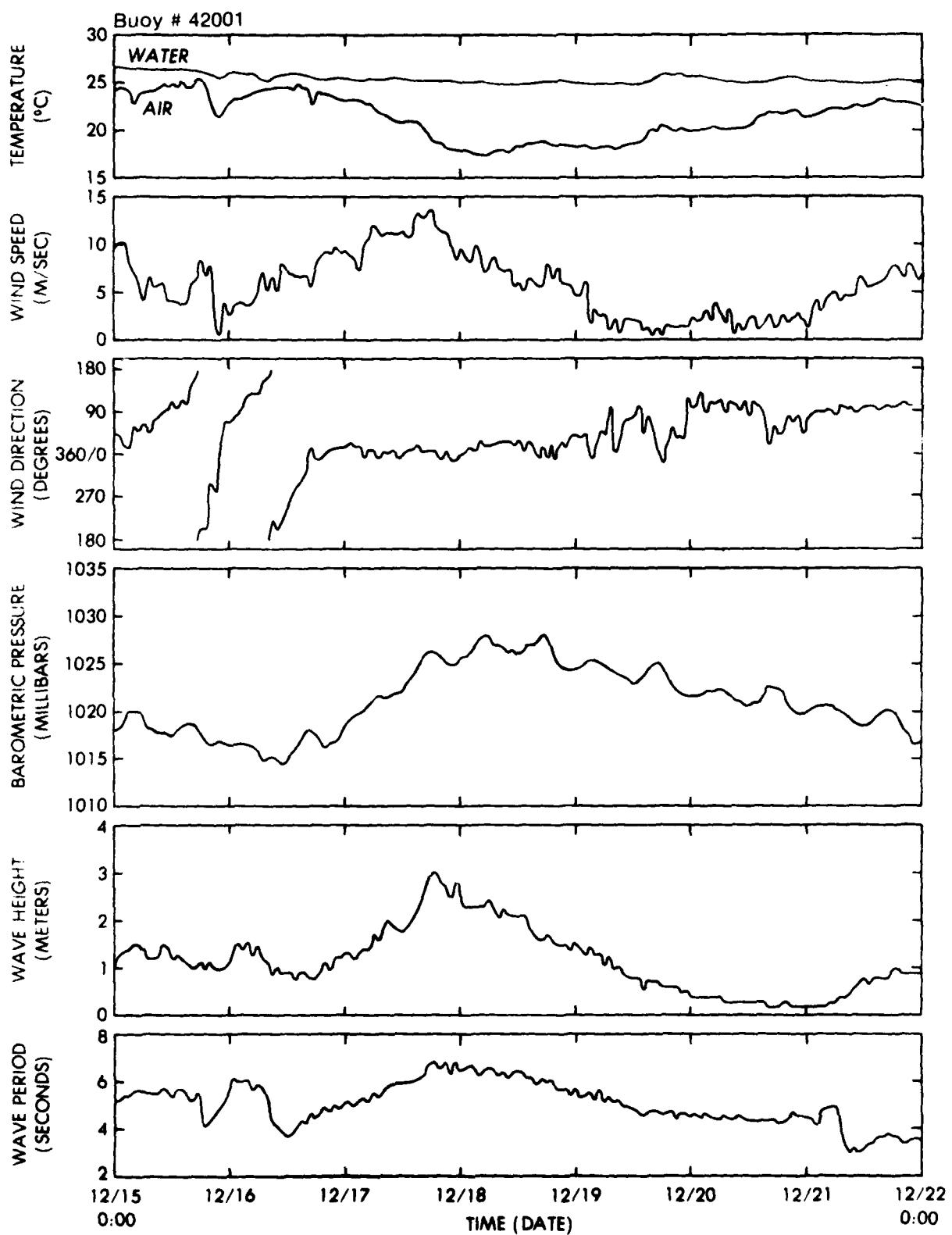


Figure 491.

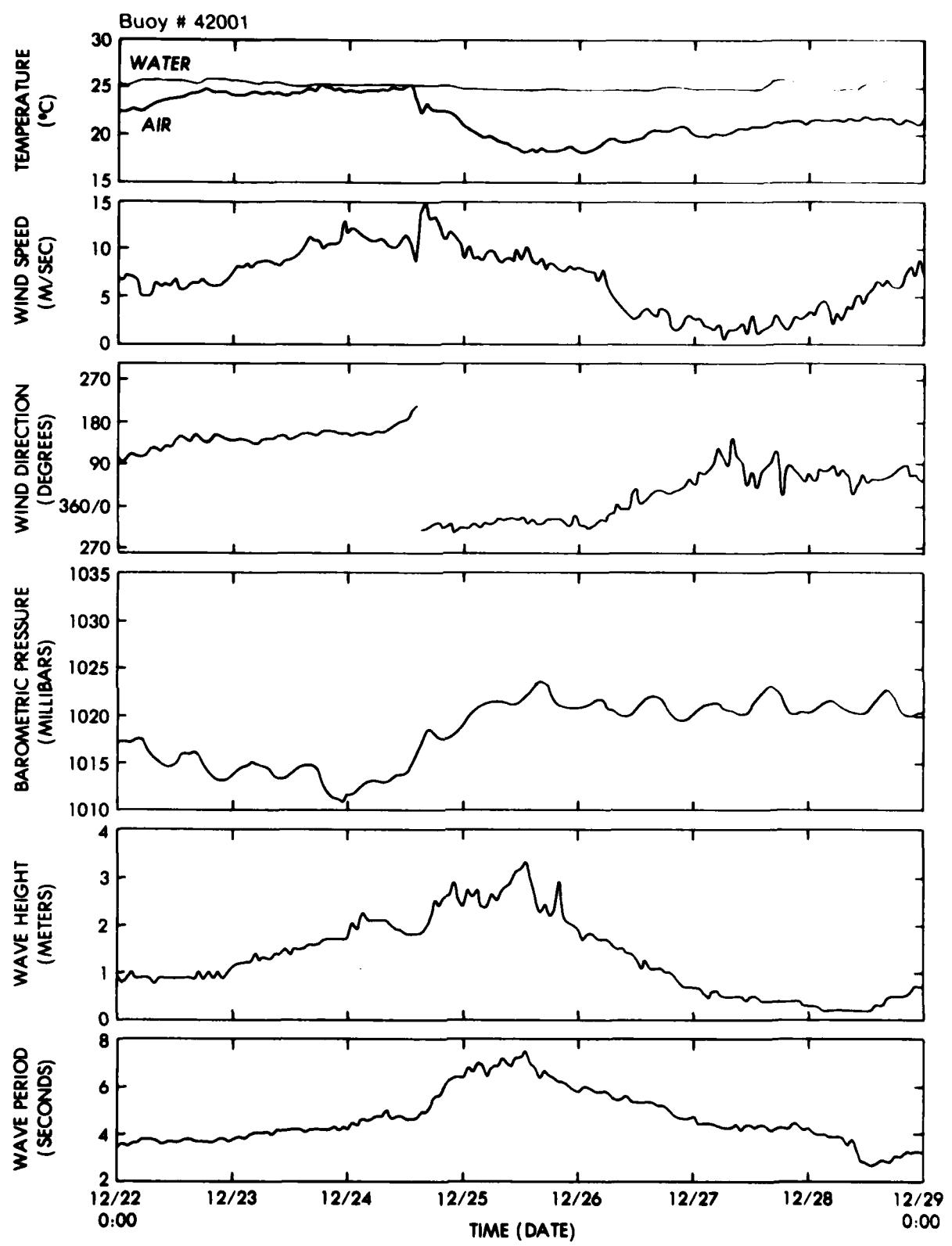


Figure 492.

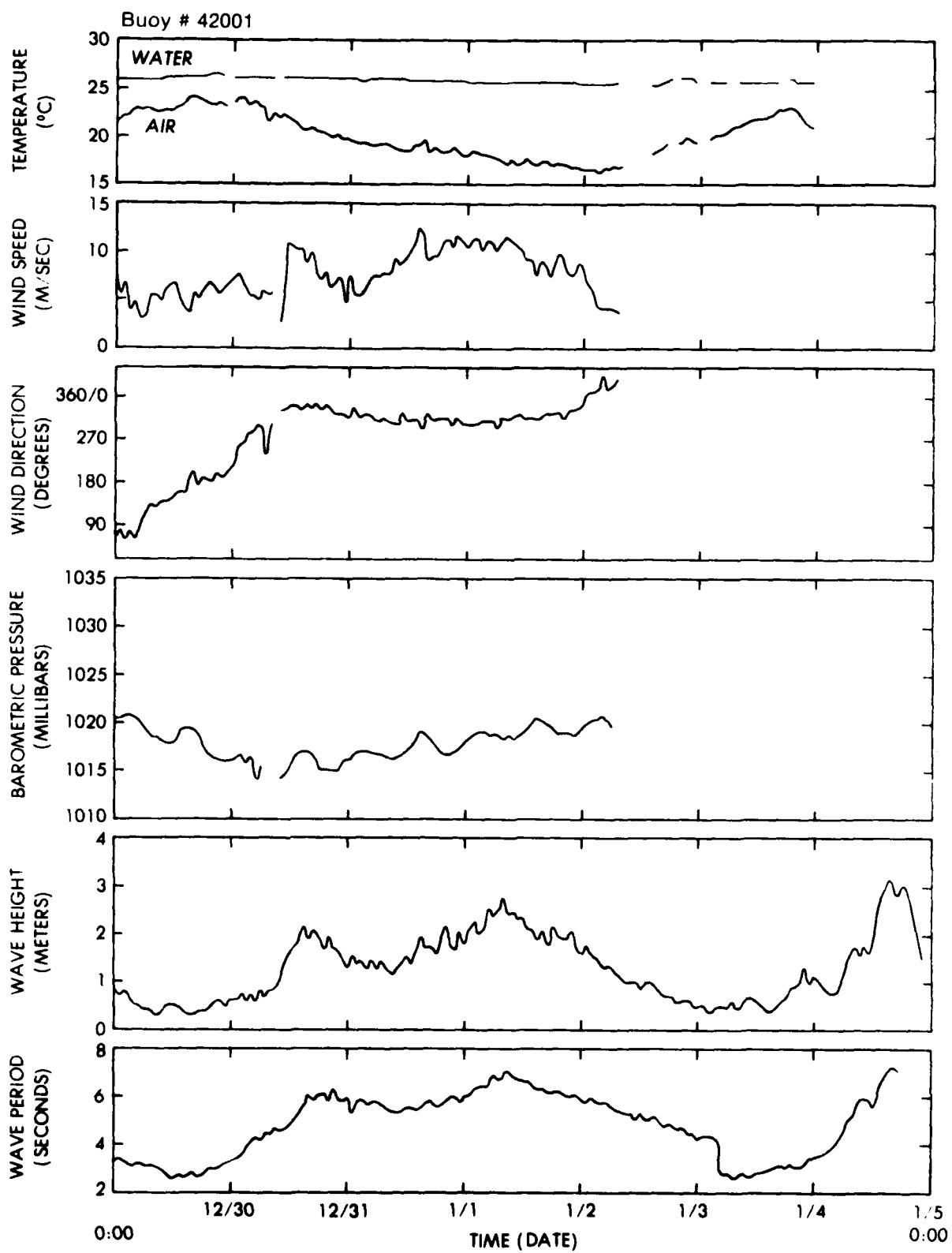


Figure 493.

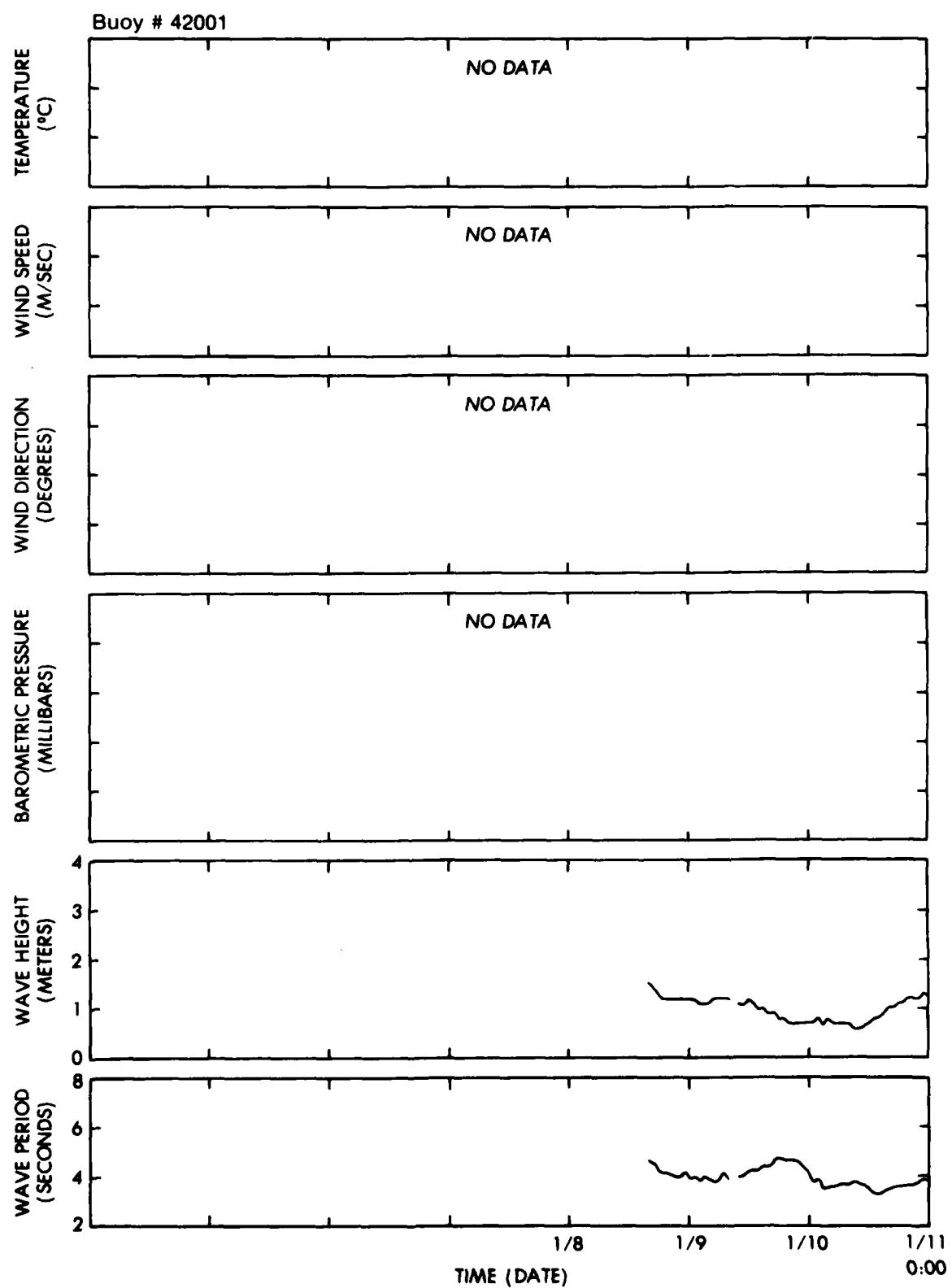


Figure 494.

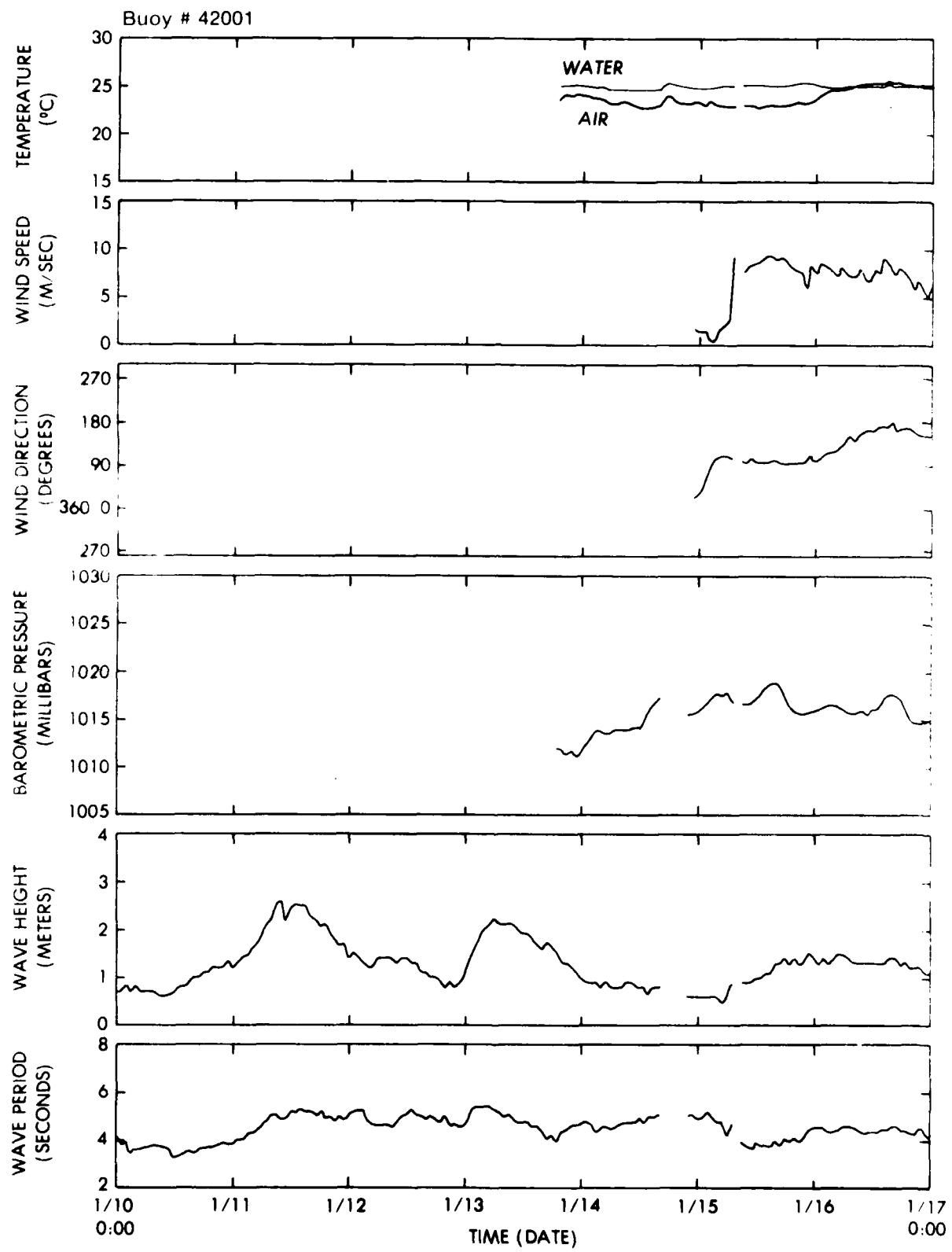


Figure 495.

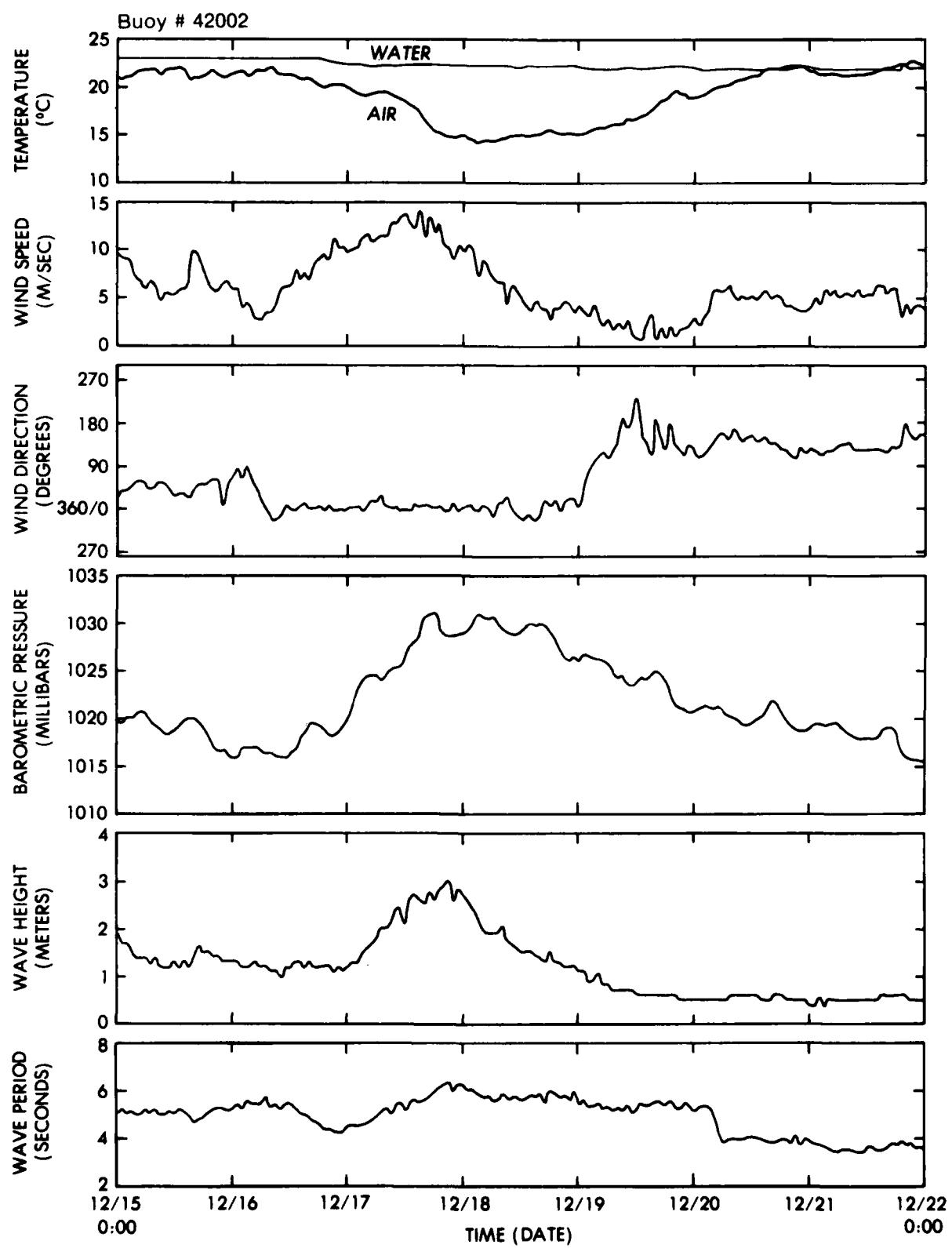


Figure 496.

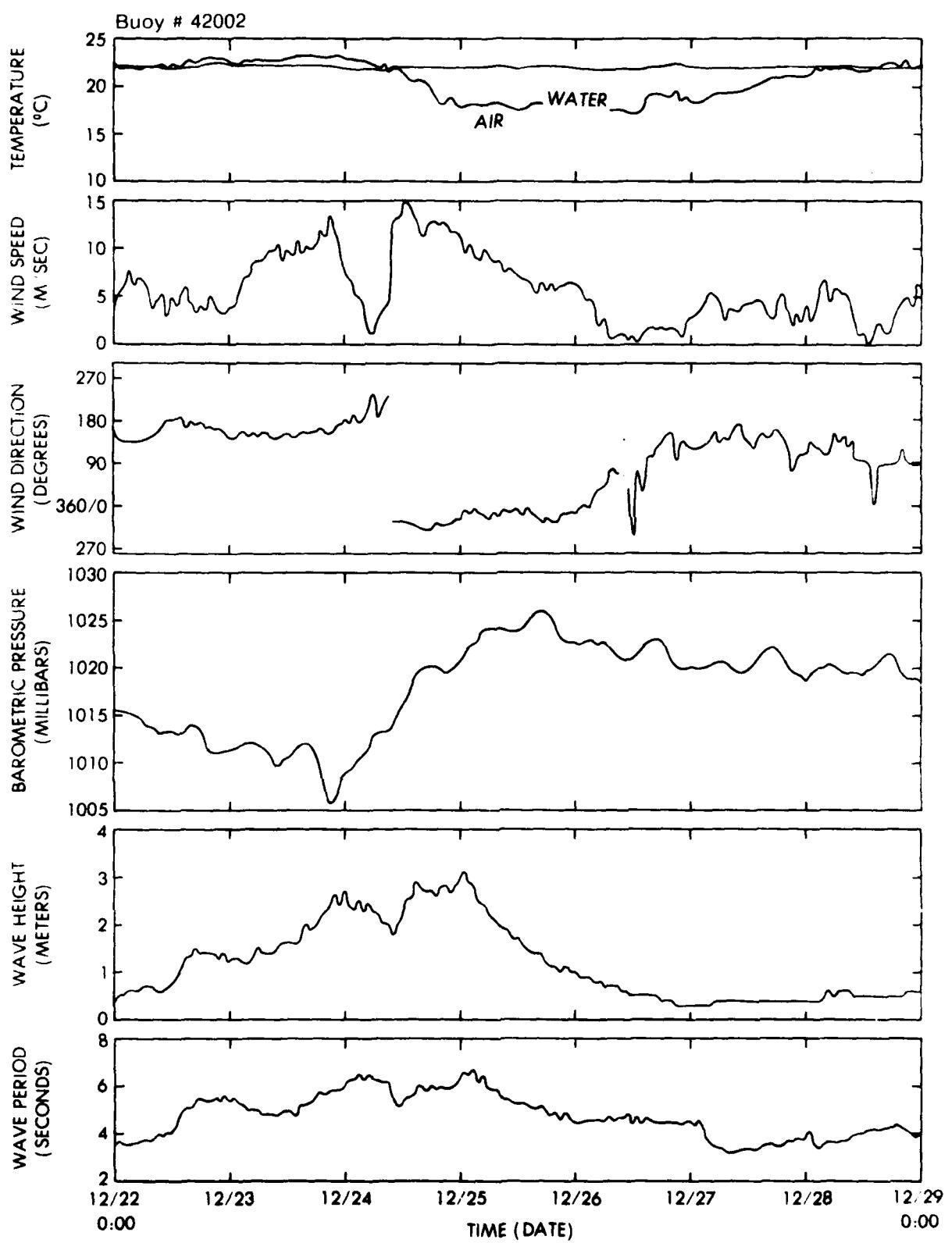


Figure 497.

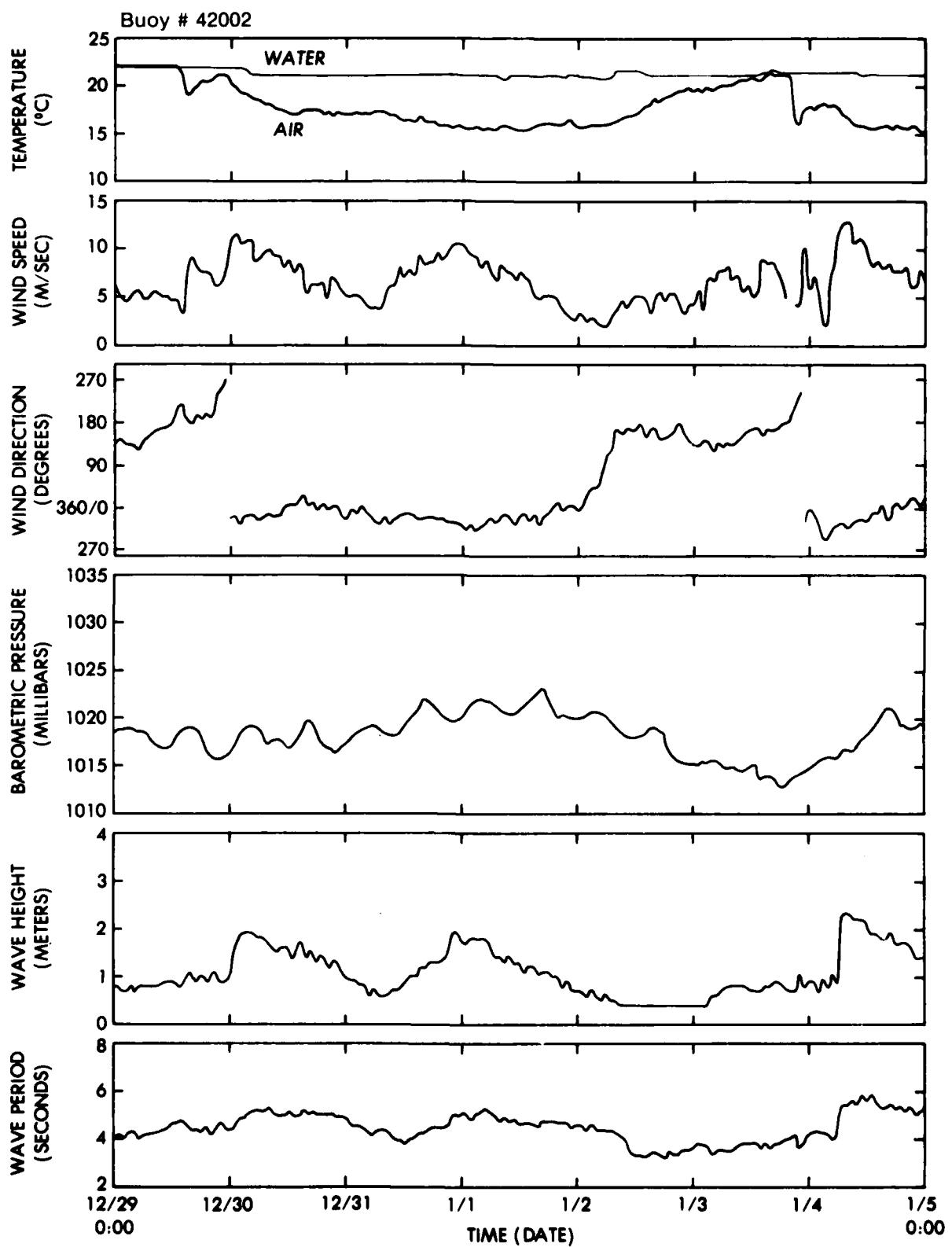


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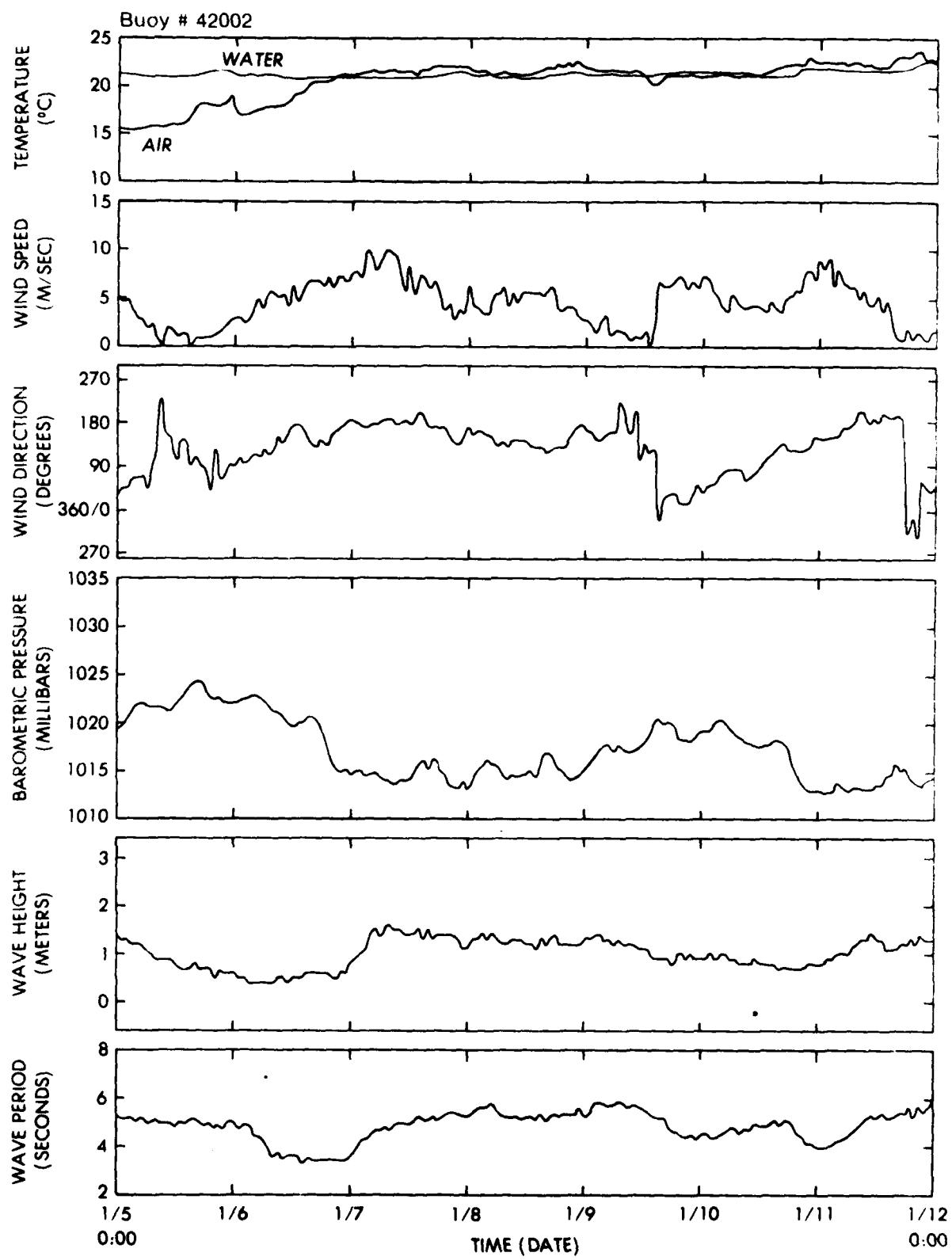


Figure 499.

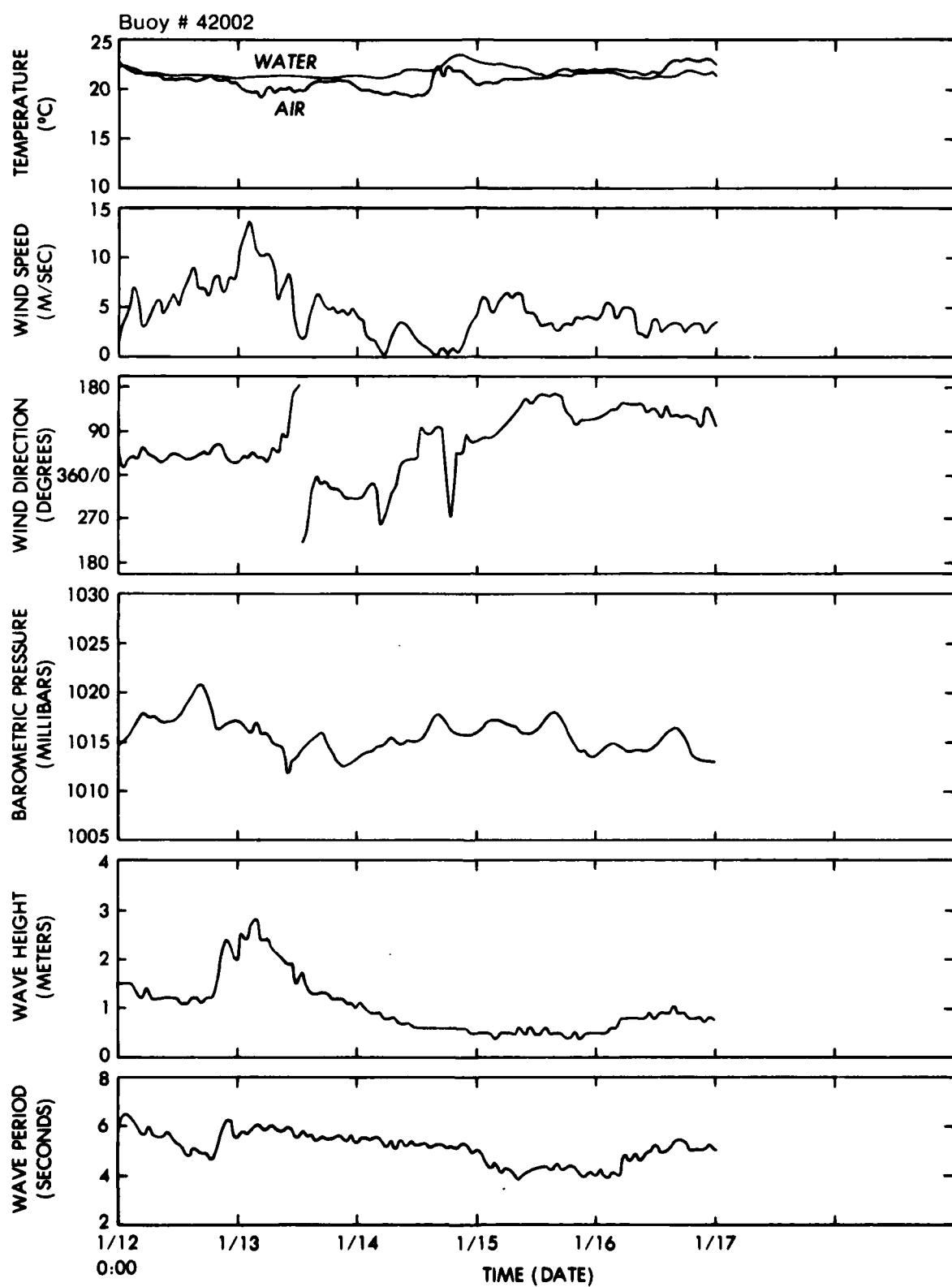


Figure 500.

5.2 Meteorological Charts for the Period of the Study (Figures 501-550)

MONDAY DECEMBER 10 1979

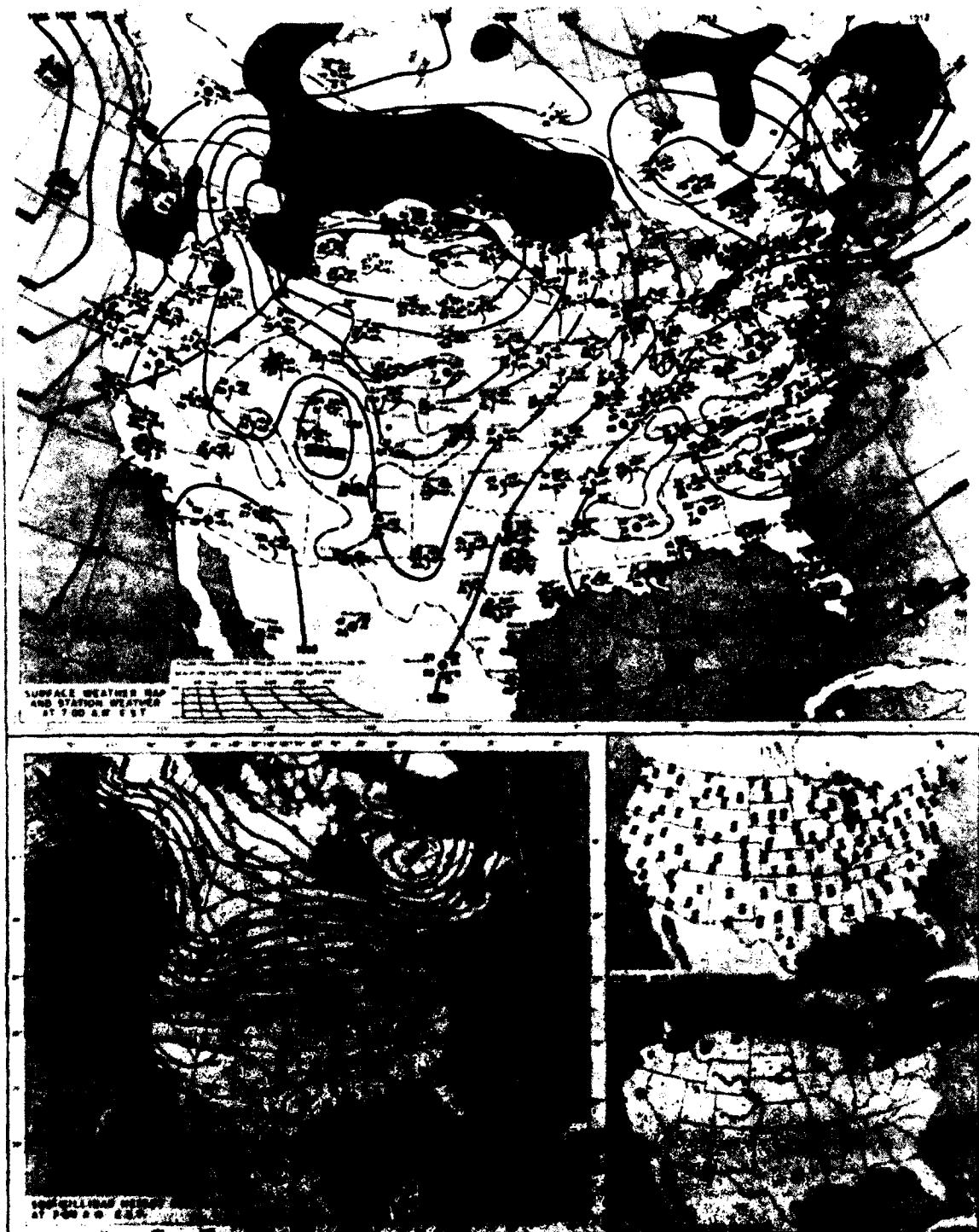


Figure 501.

TUESDAY DECEMBER 11 1979



Figure 502.

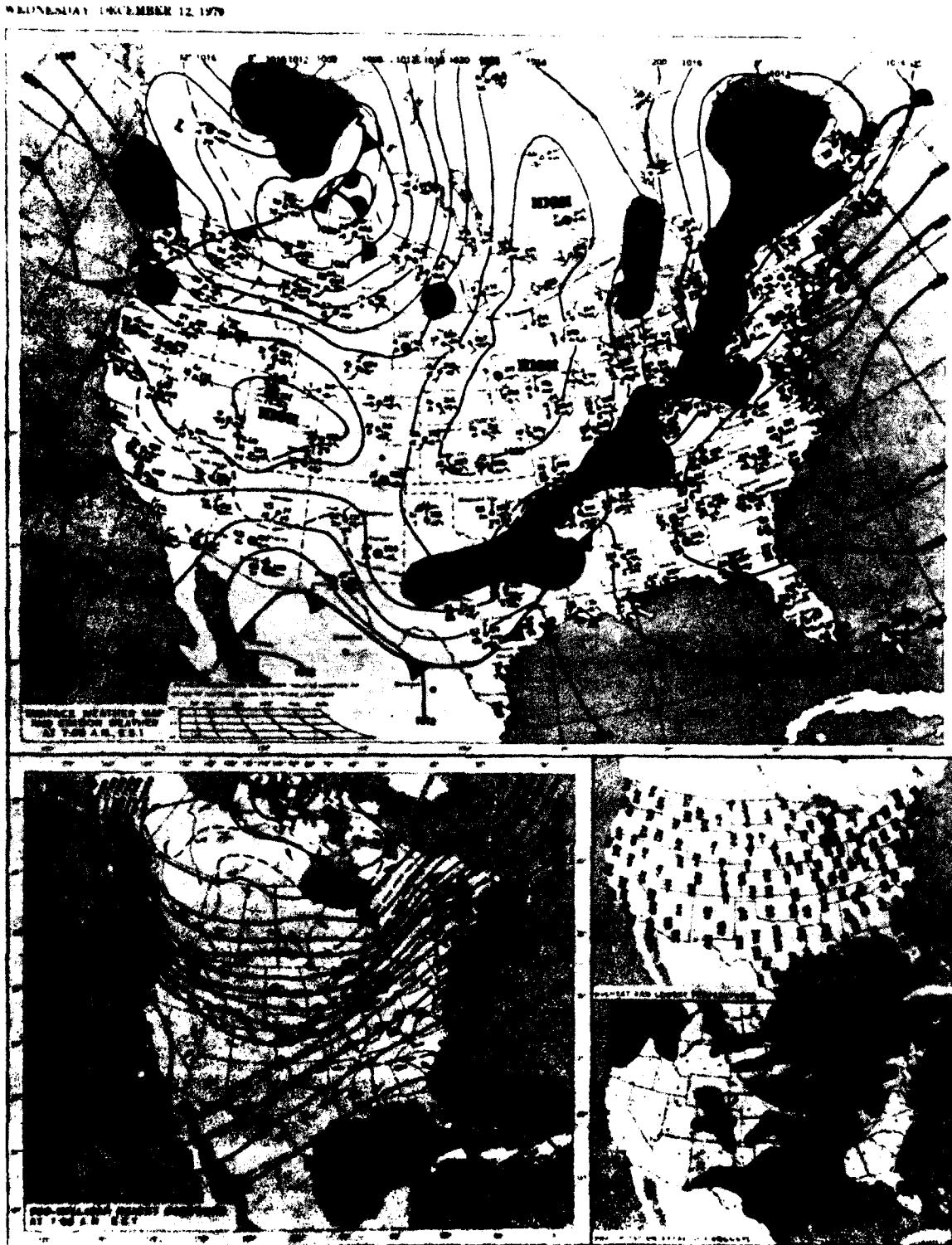


Figure 503.

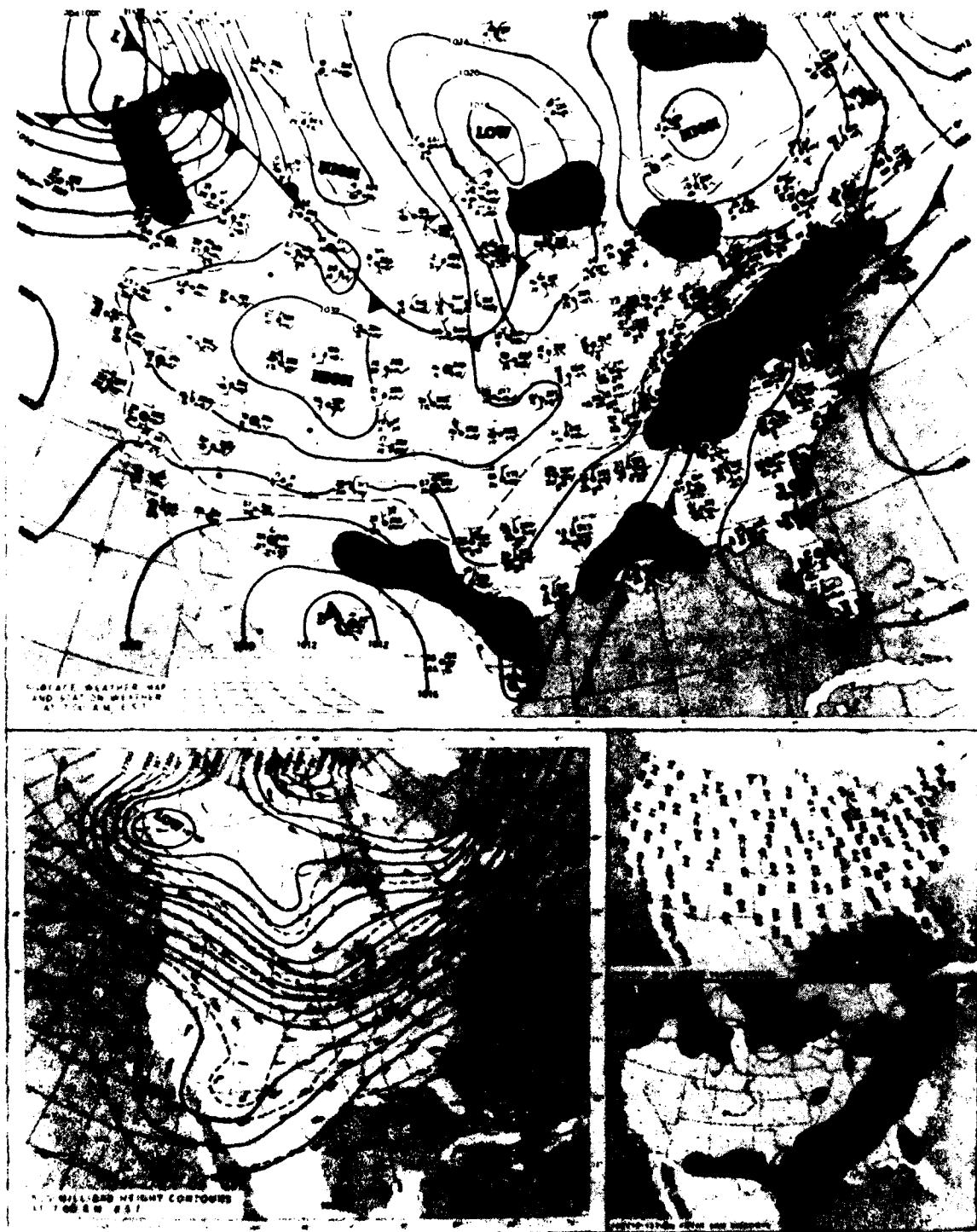


Figure 504.

FRIDAY, DECEMBER 14, 1979



Figure 505.

SATURDAY DECEMBER 11, 1976

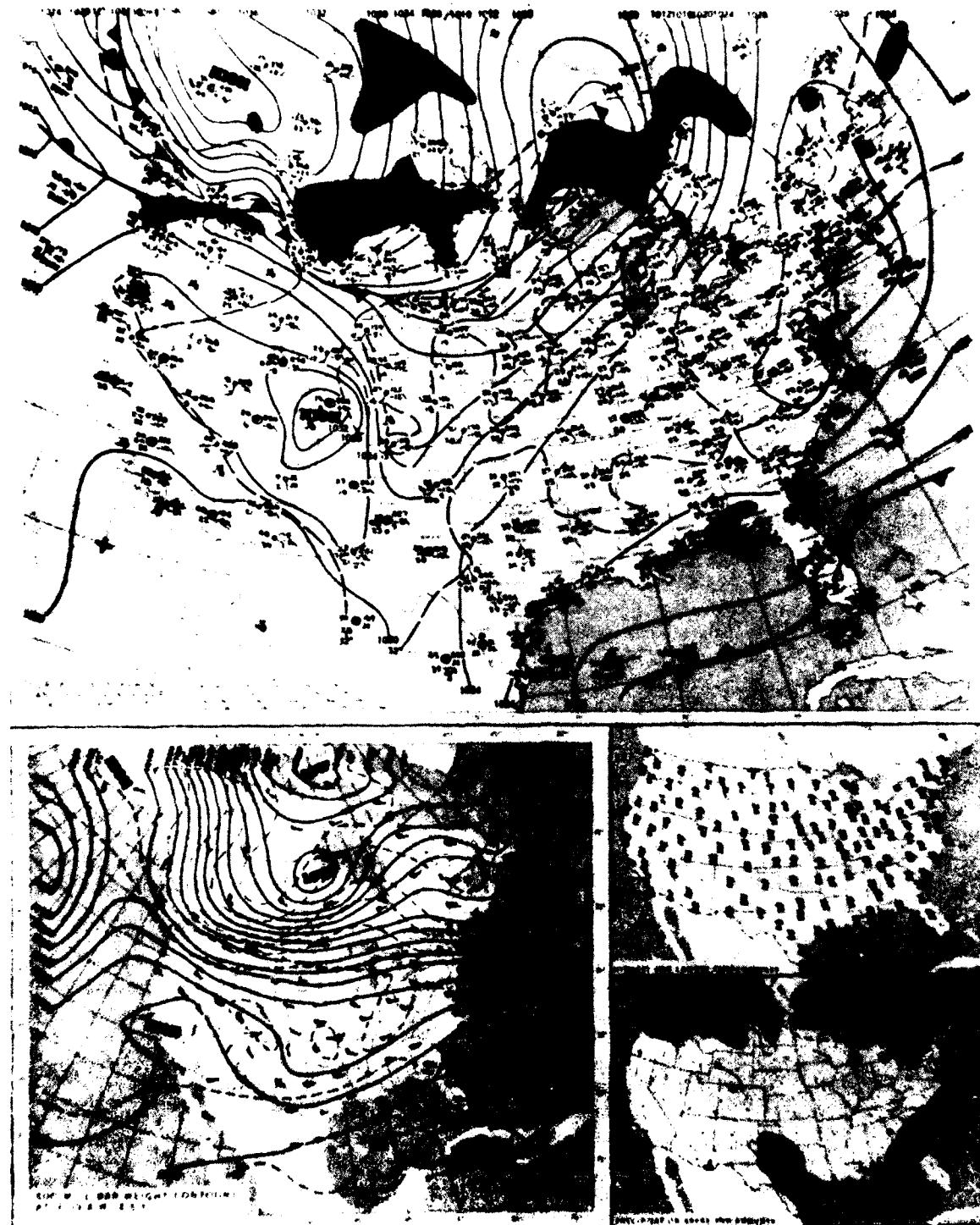


Figure 506.

SUNDAY DECEMBER 10, 1978

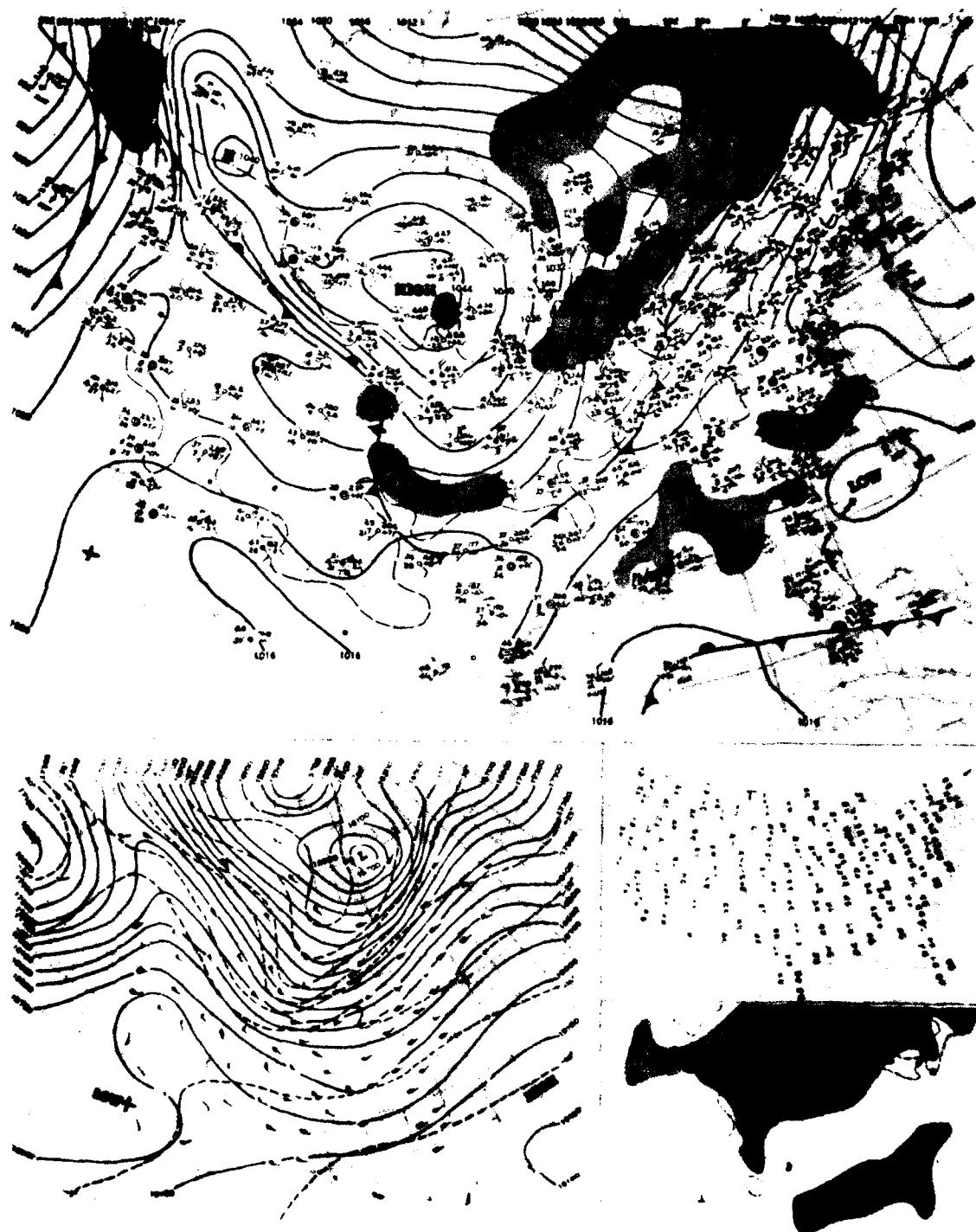


Figure 507.

MONDAY, DECEMBER 17, 1962

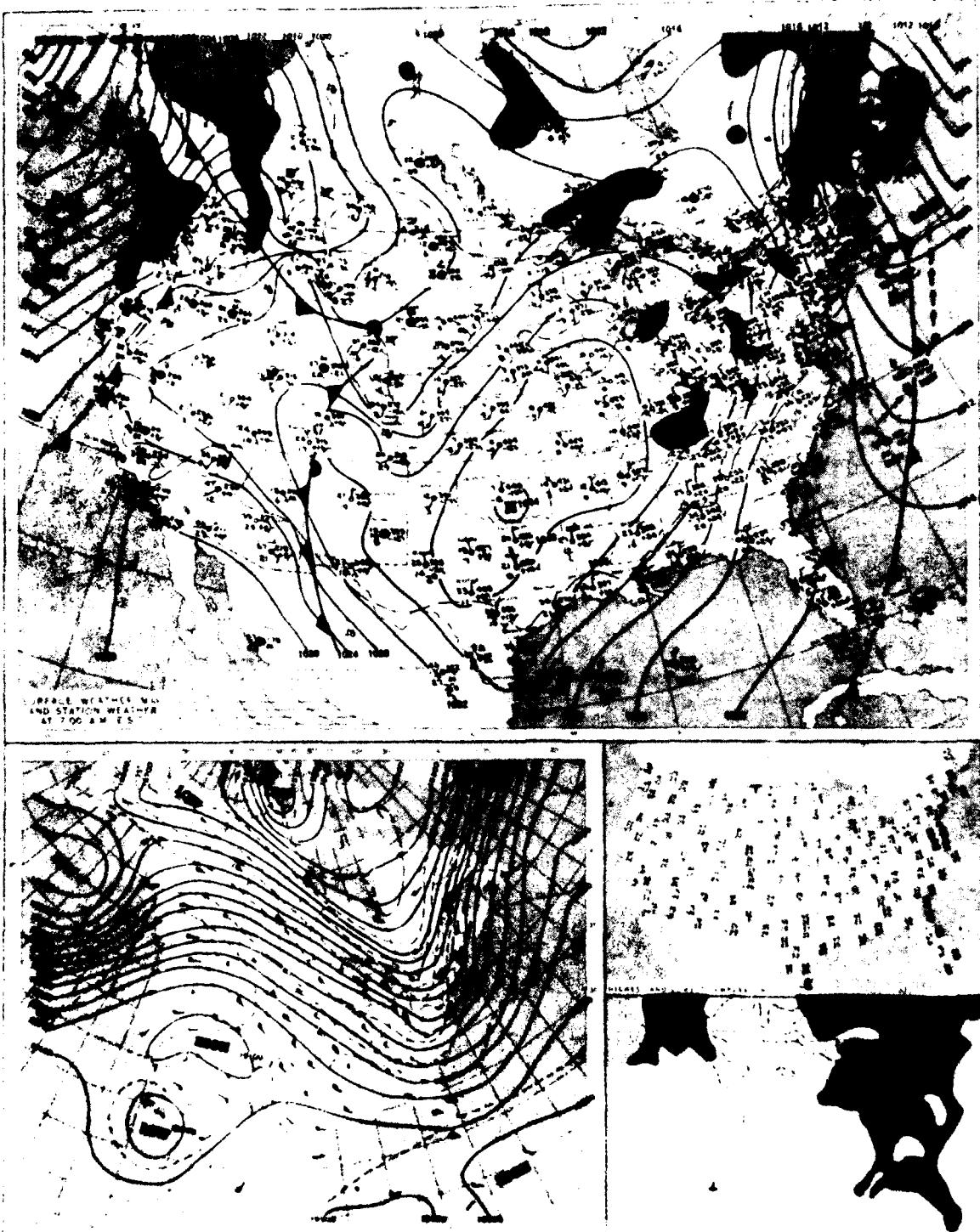


Figure 508.

TUESDAY DECEMBER 1 1964

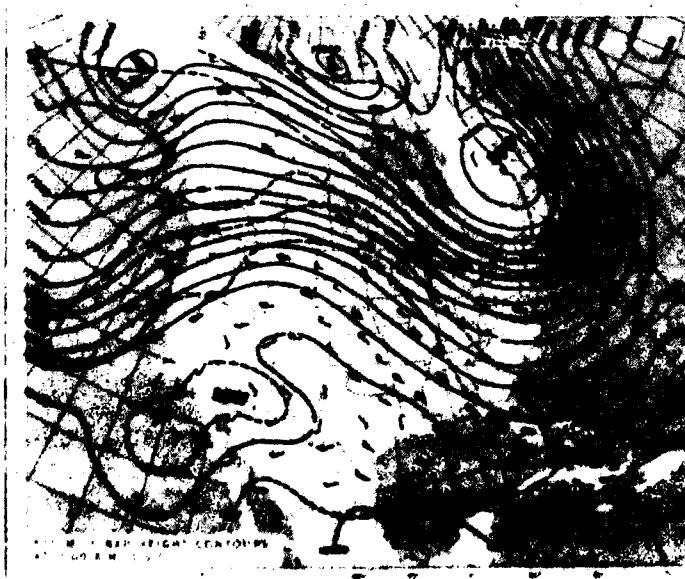
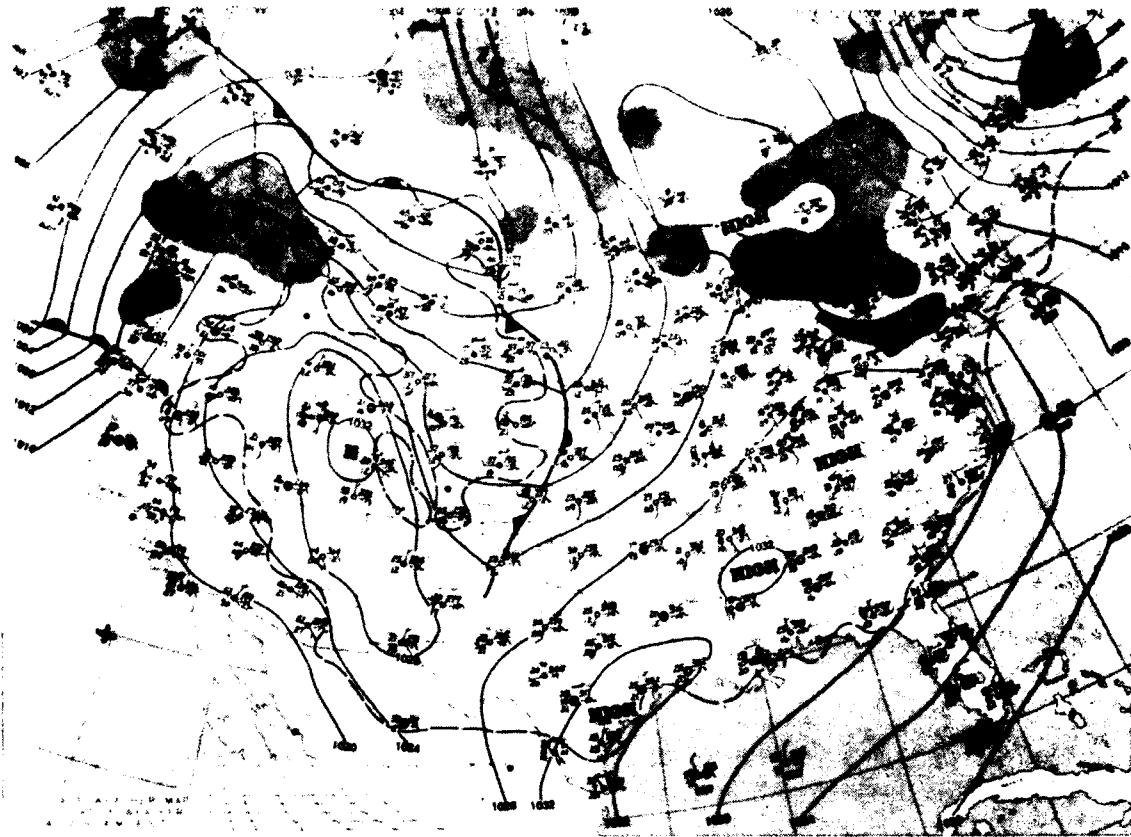
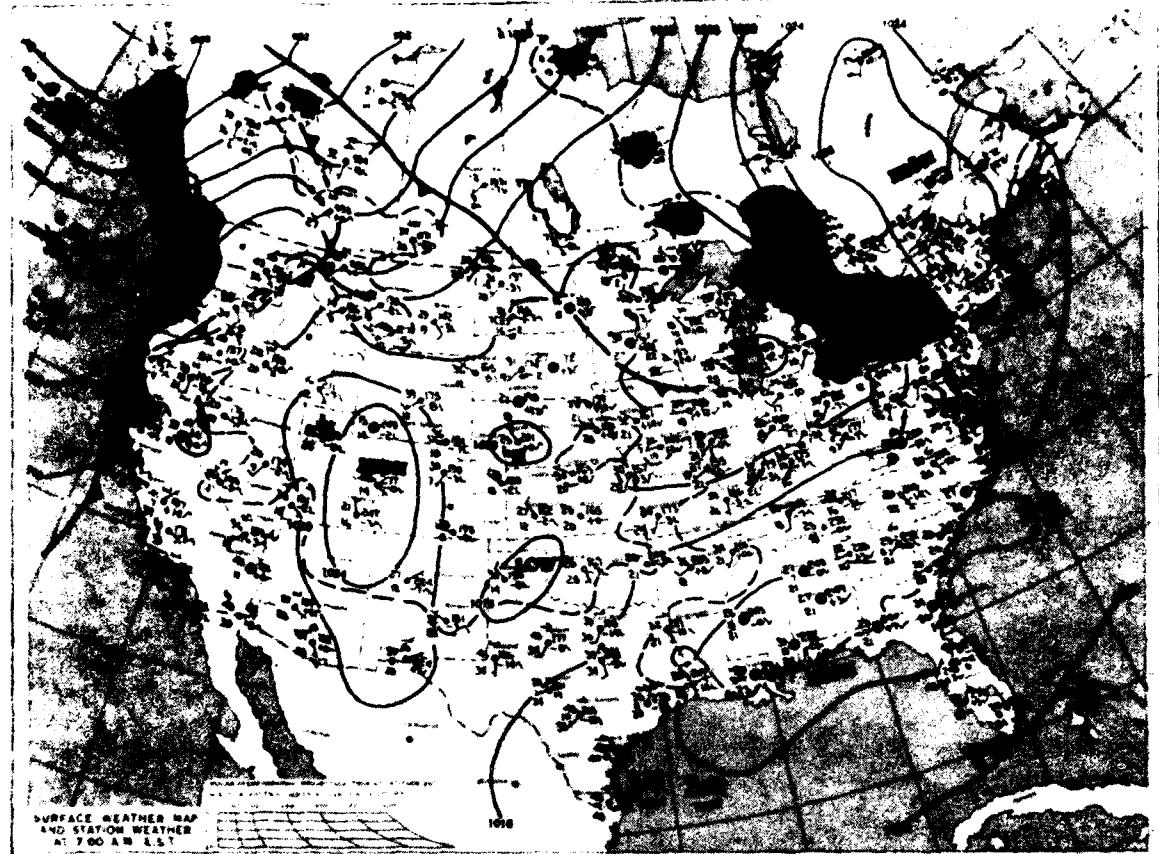
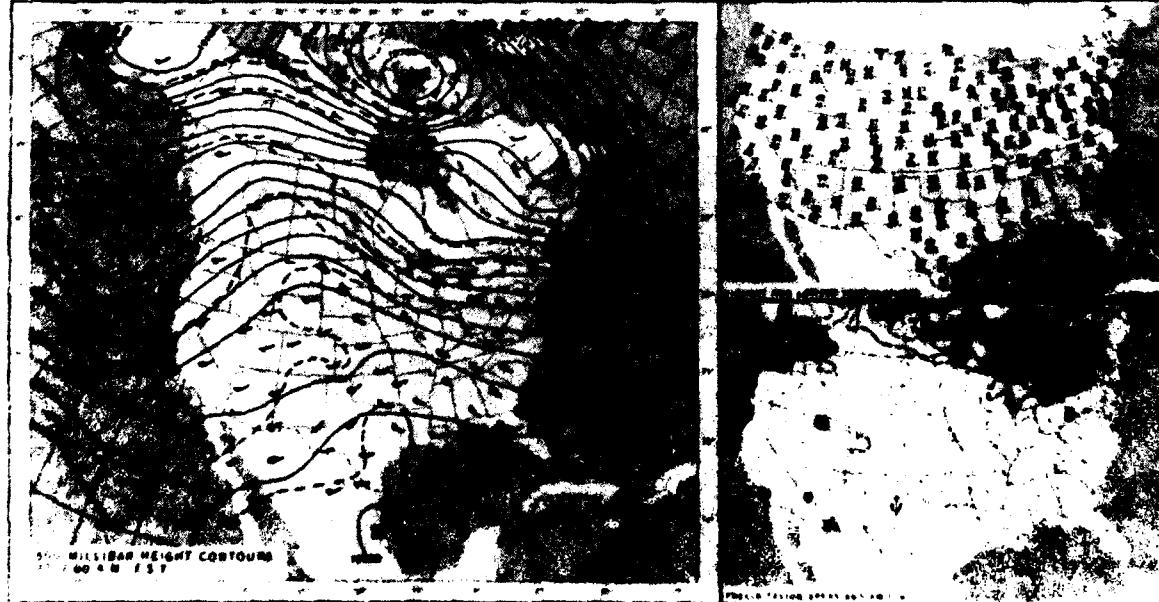


Figure 509.

MONDAY DECEMBER 9 1974



SURFACE WEATHER MAP
DECEMBER 9 1974
AT 7:00 AM EST



50 MB MILLIBAR HEIGHT CONTOURS
600 MB EST

Figure 510.

THURSDAY DECEMBER 5 1963

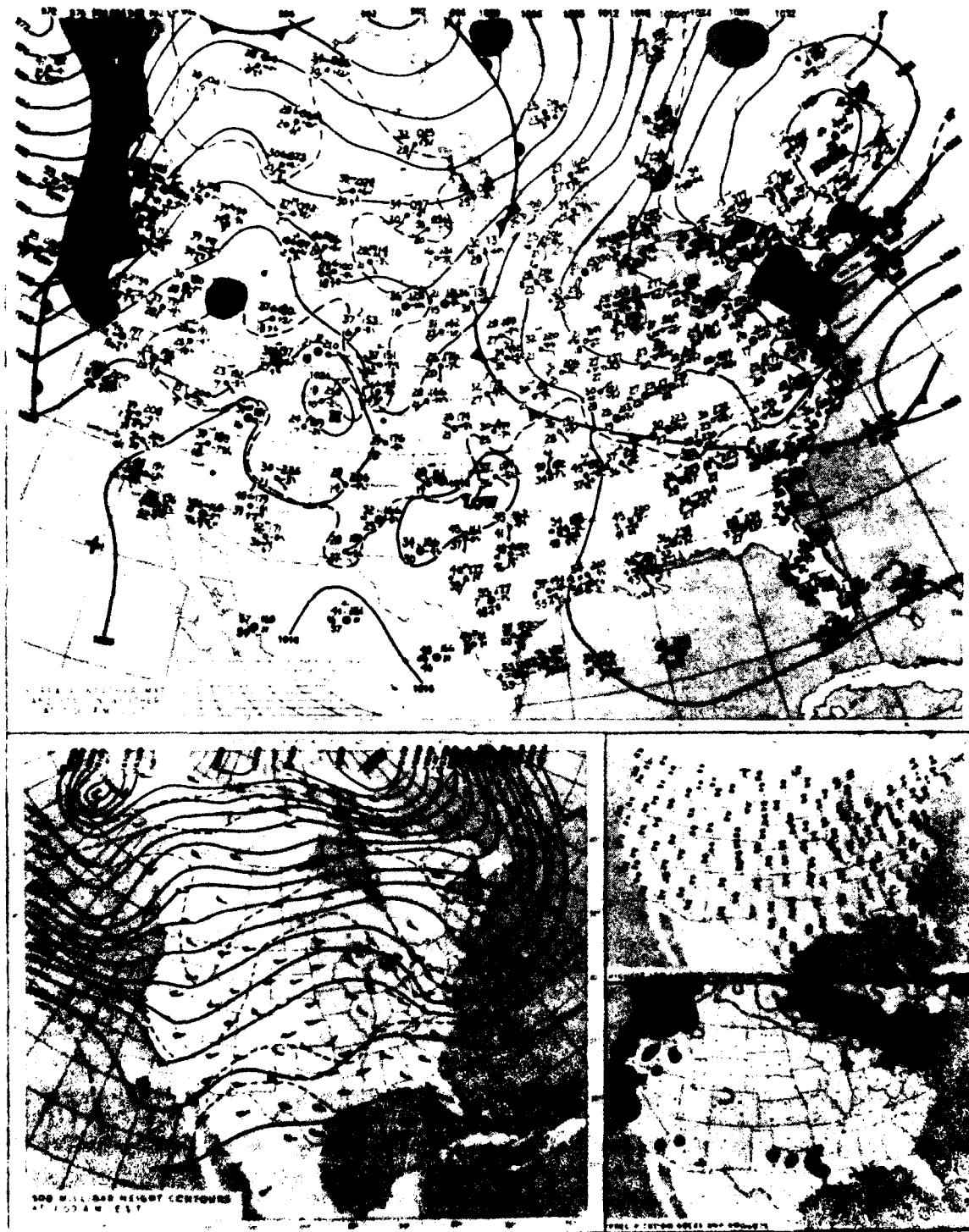


Figure 511.

FRIDAY DECEMBER 21, 1979



Figure 512.

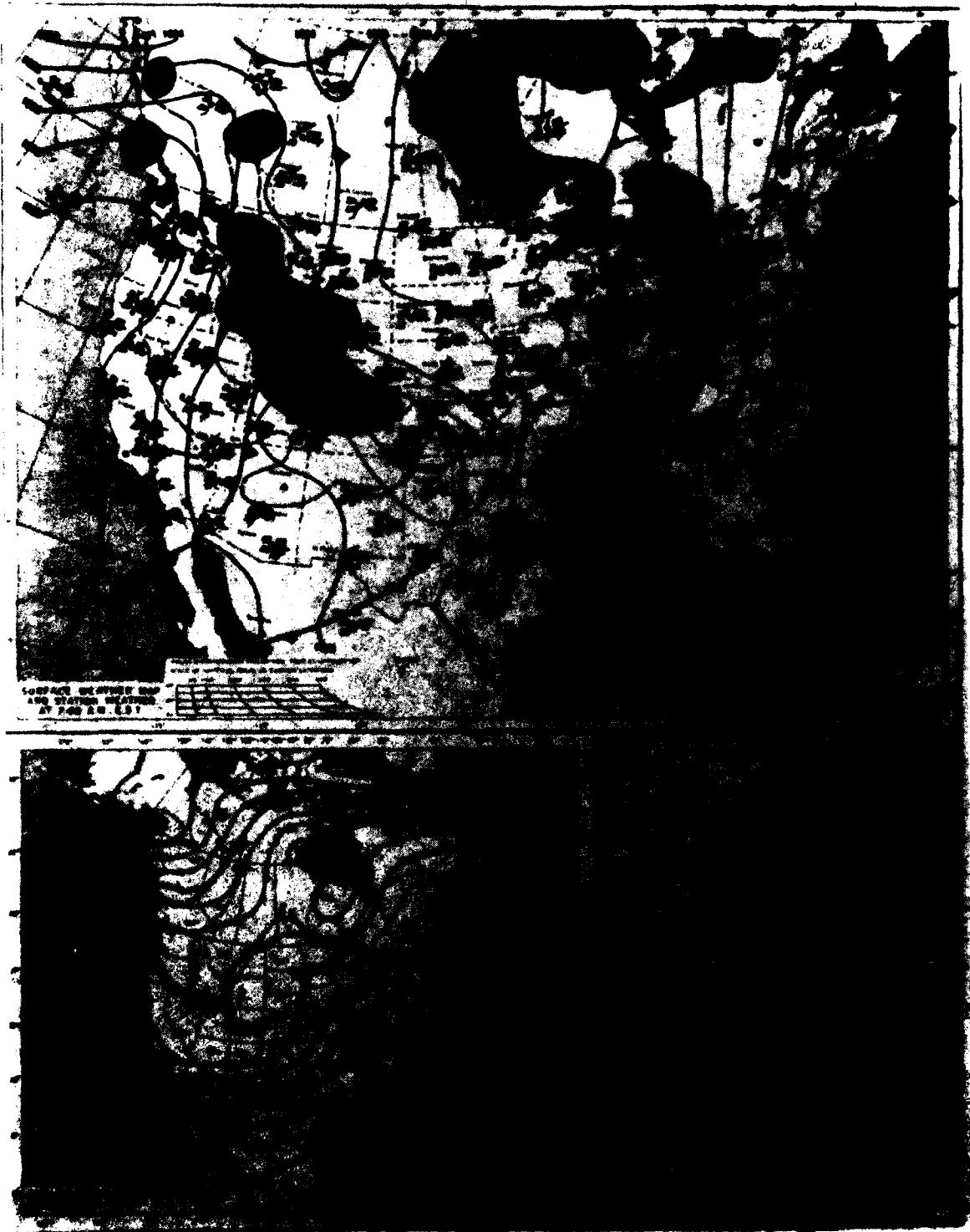


Figure 513.

SUNDAY, DECEMBER 28, 1975



Figure 514.

SUNDAY, DECEMBER 24, 1978



Figure 515.

TUESDAY, 10A MARCH 26, 1979

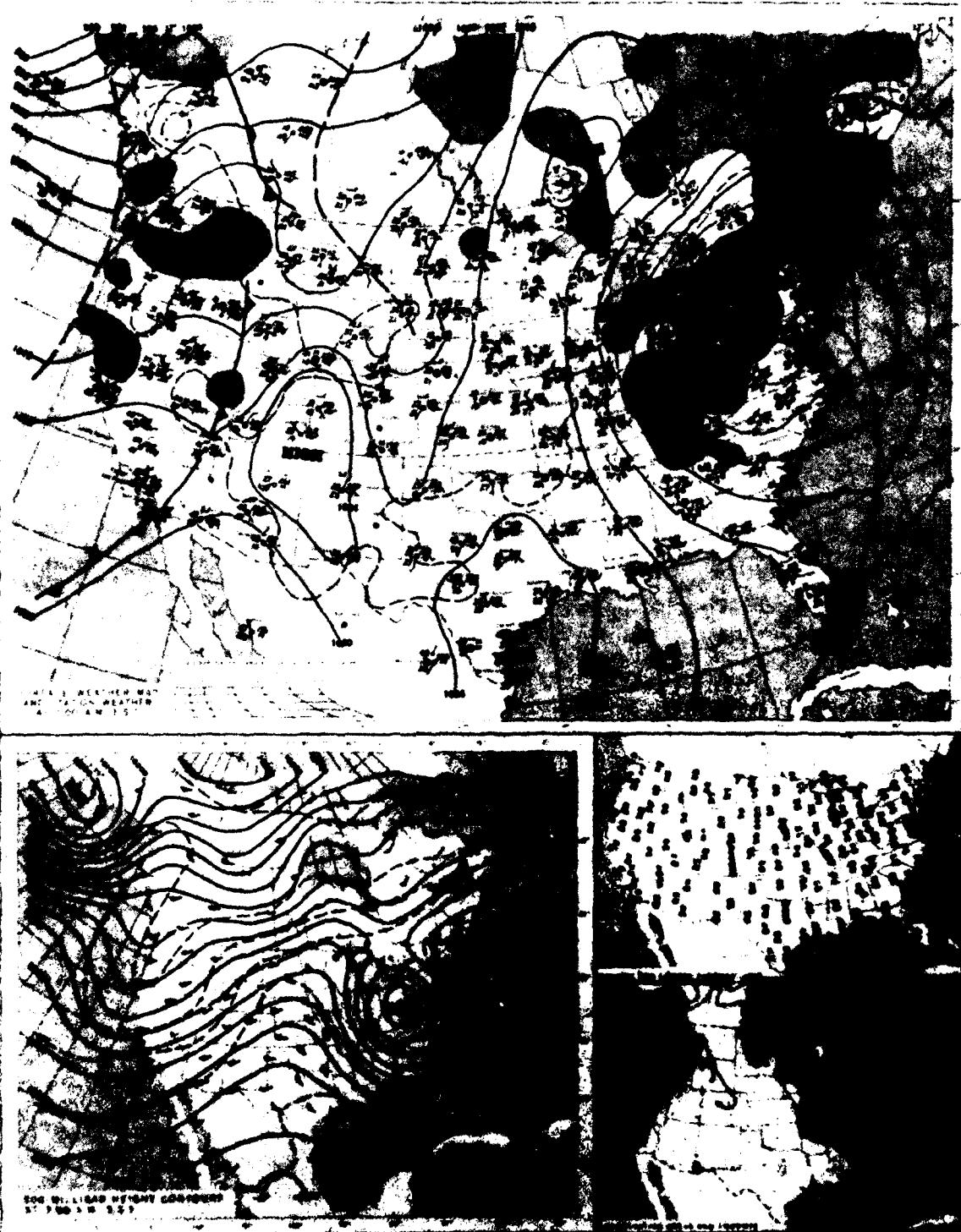


Figure 516.

WEDNESDAY DEC 26 1979

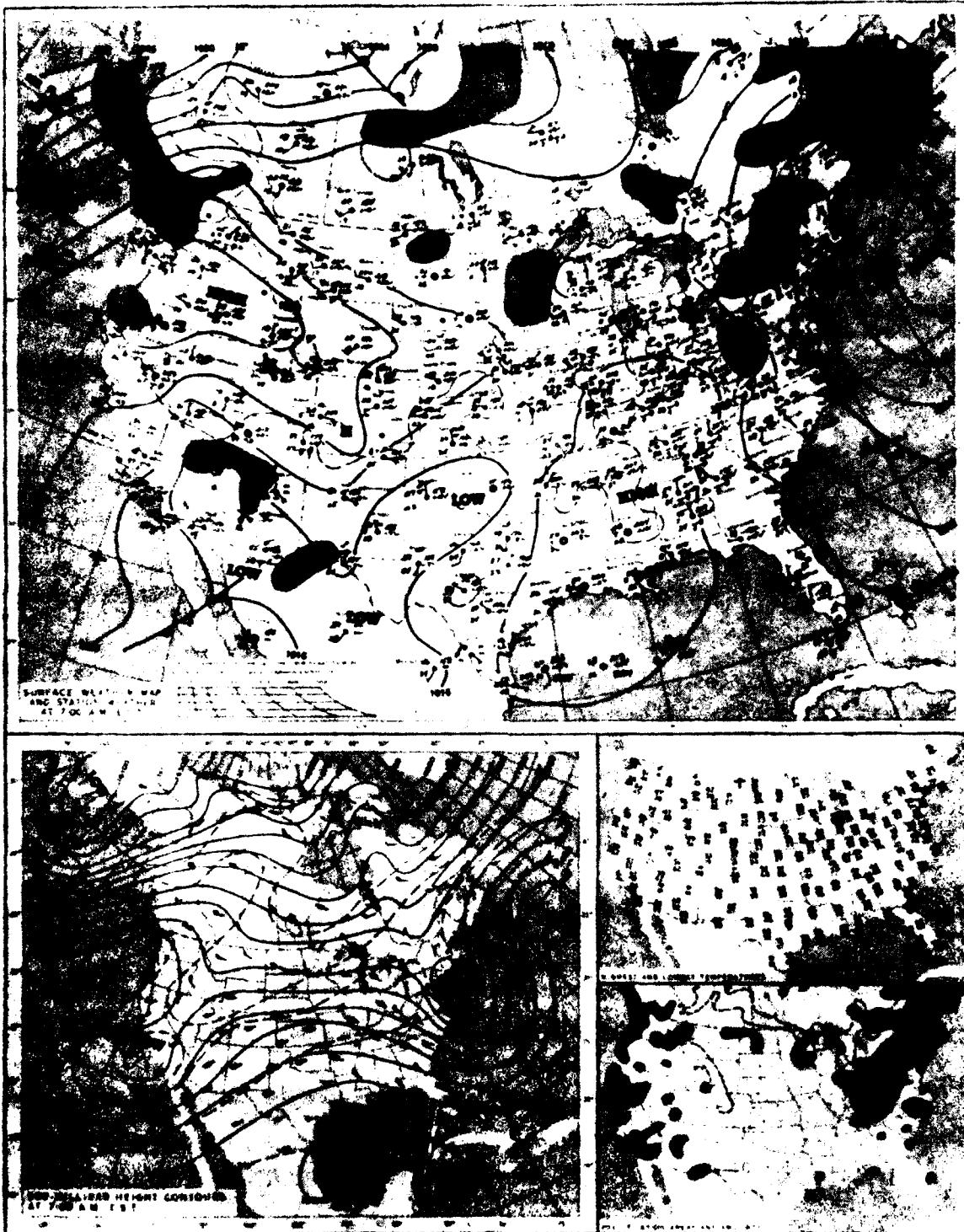


Figure 517.

THURSDAY, DECEMBER 27, 1979

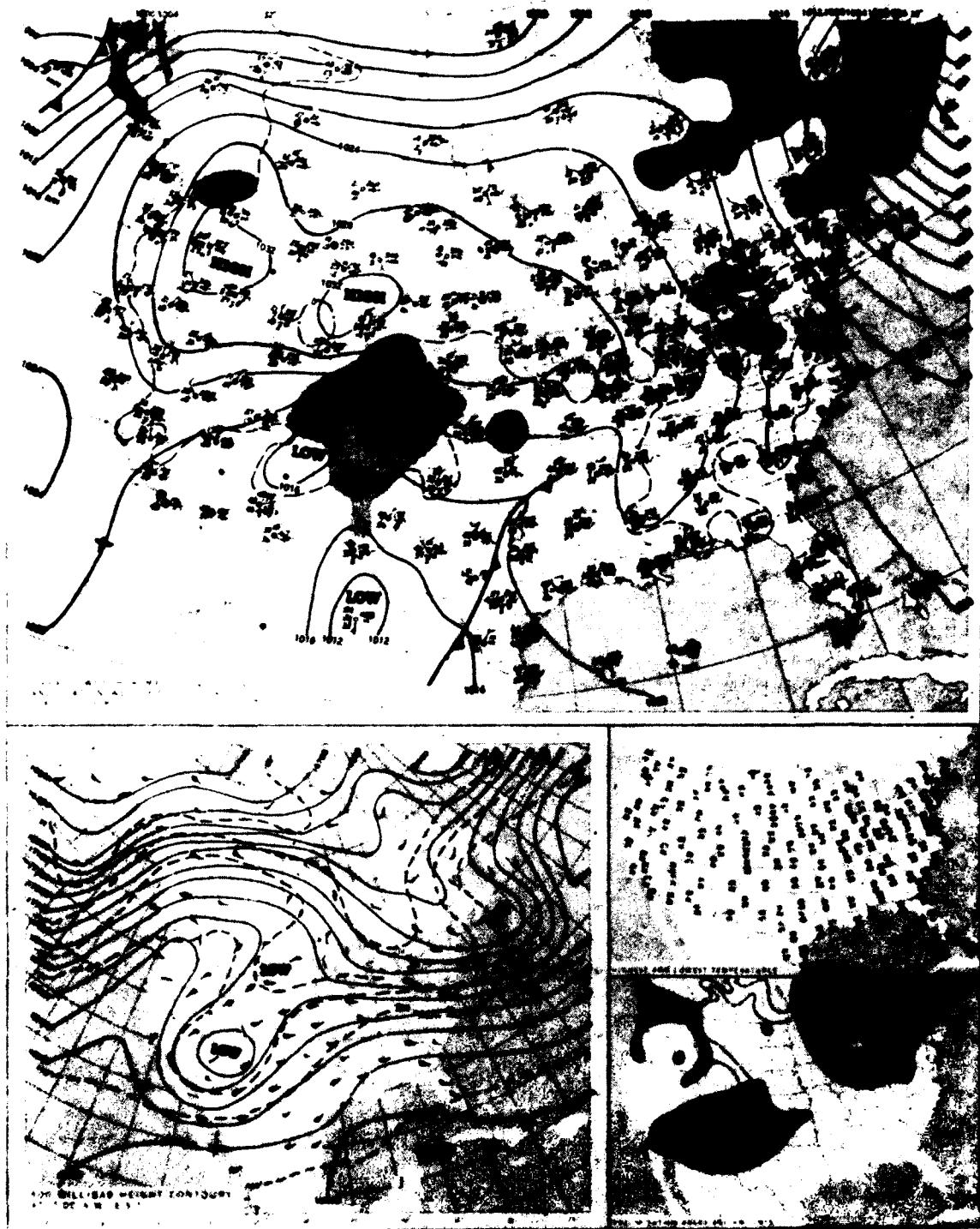


Figure 518.

TUESDAY, DECEMBER 29, 1970

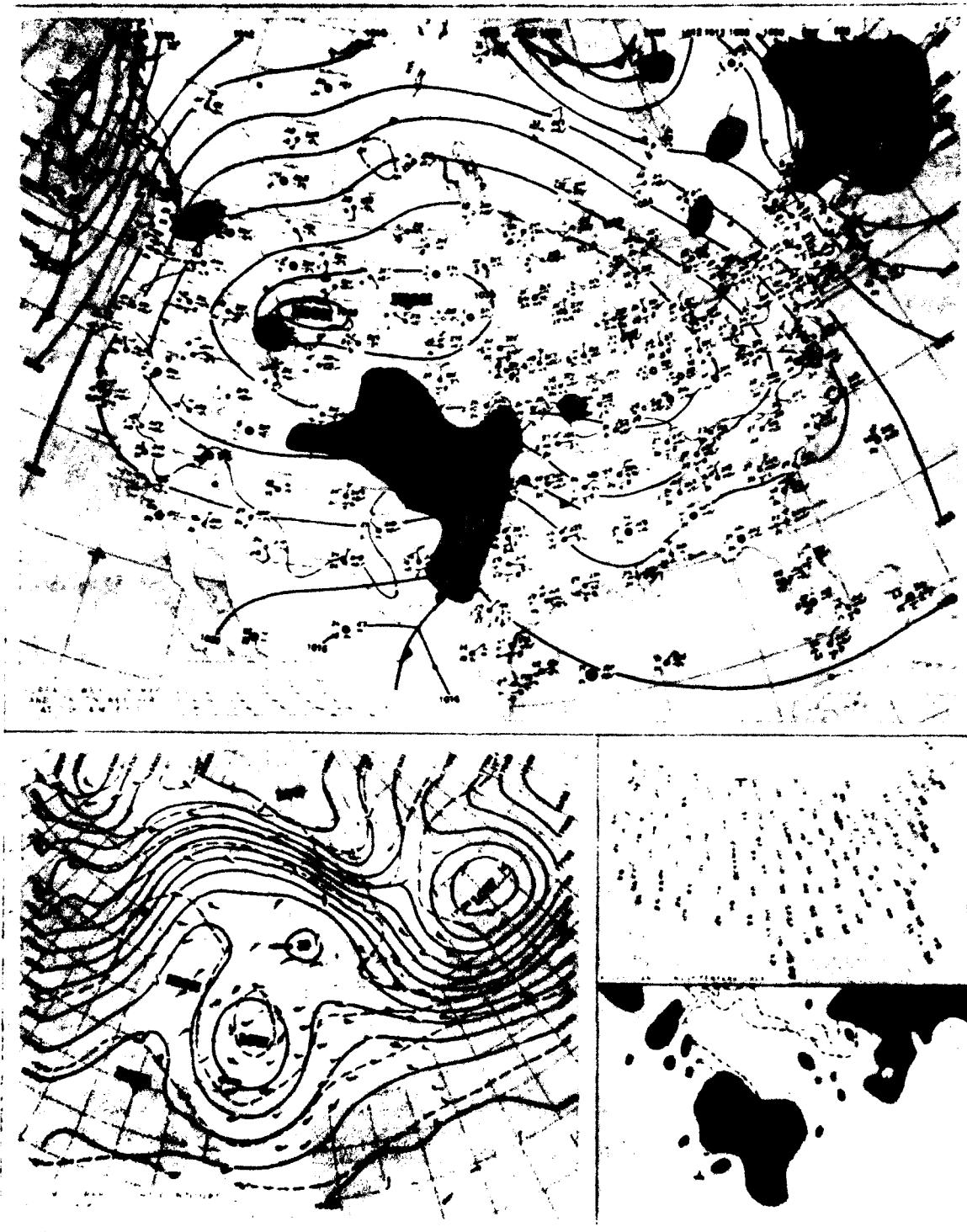


Figure 519.

SATURDAY, DECEMBER 29, 1979

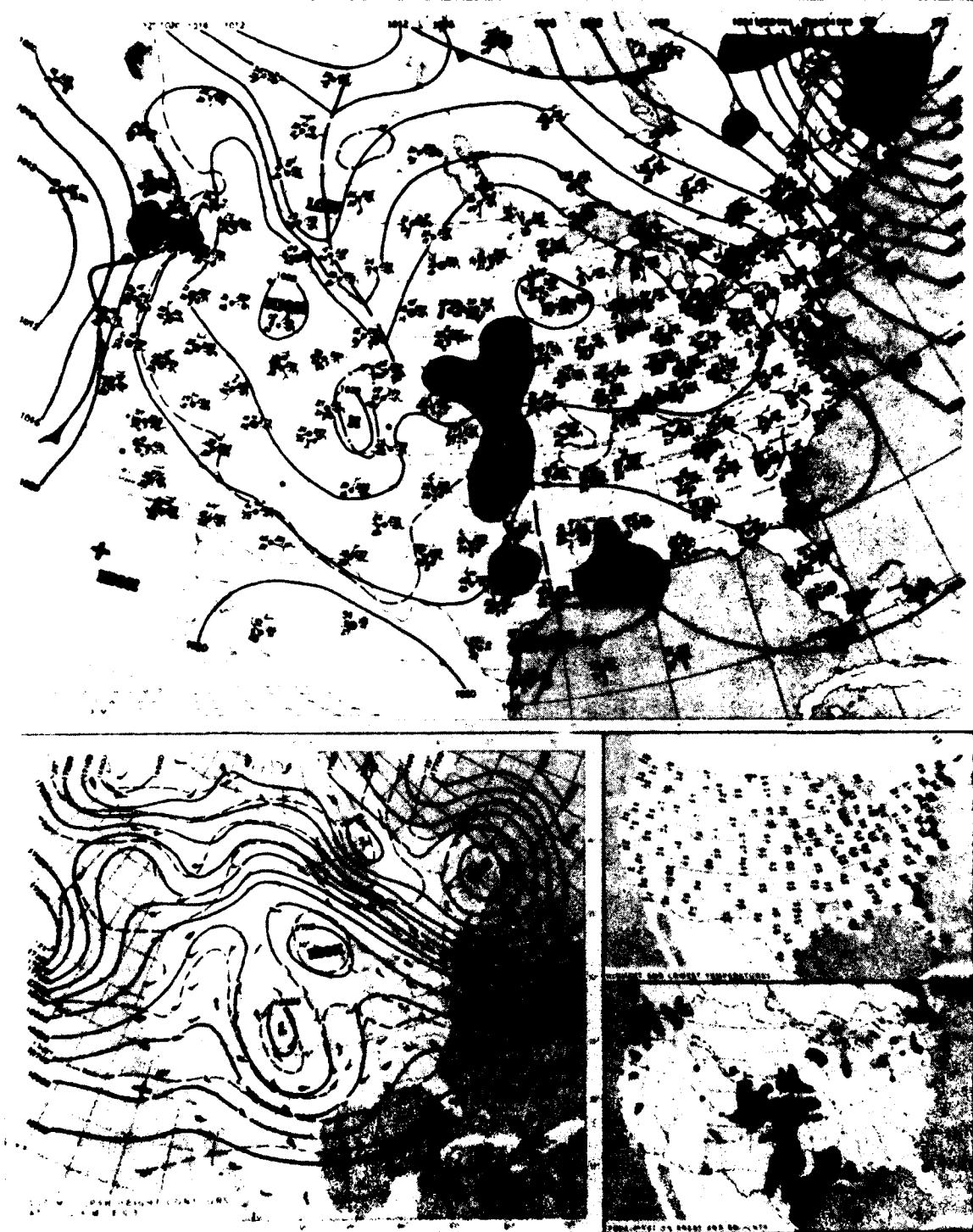


Figure 520.

SUNDAY, DECEMBER 20, 1970

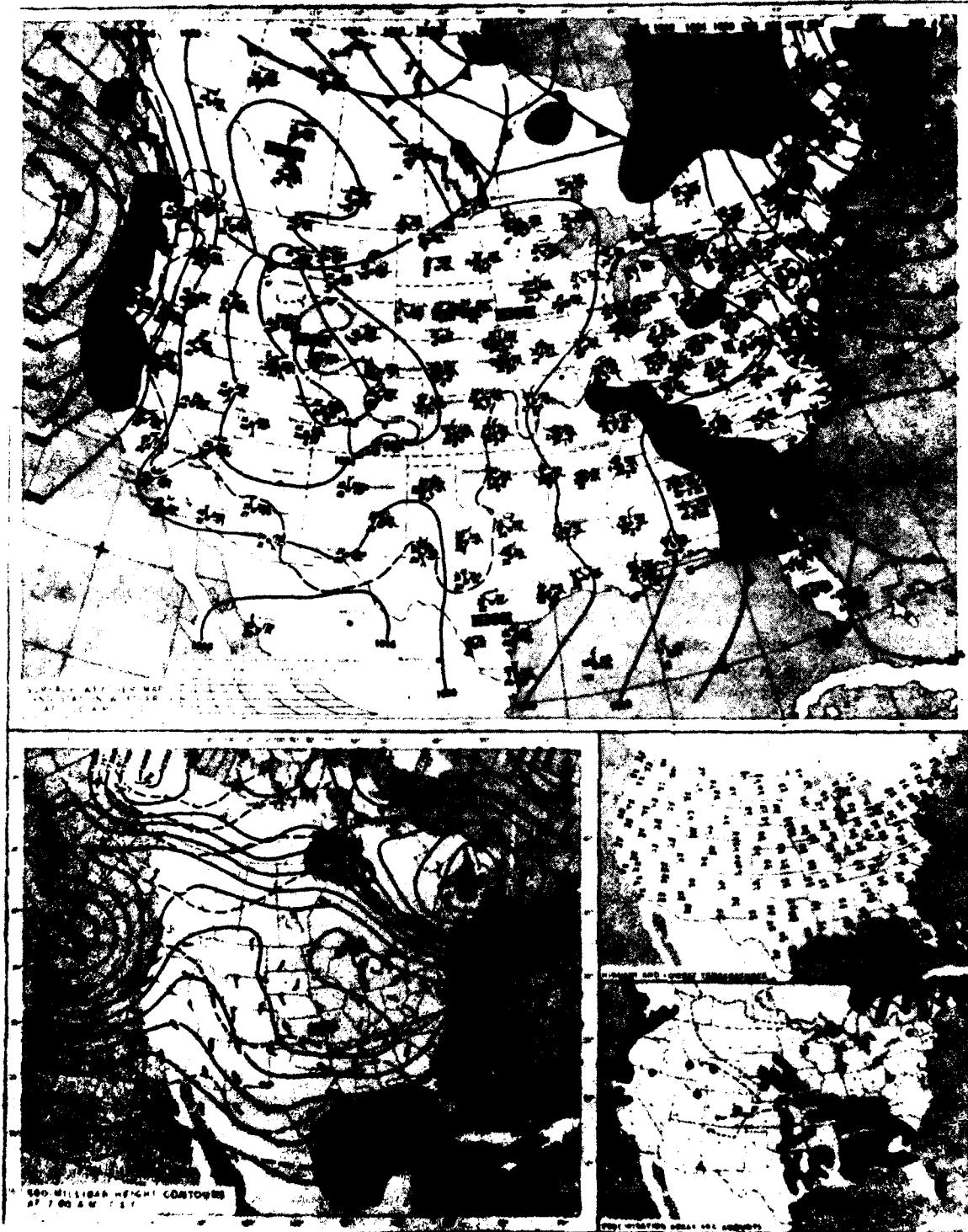


Figure 521.

MONDAY, DECEMBER 11, 1979

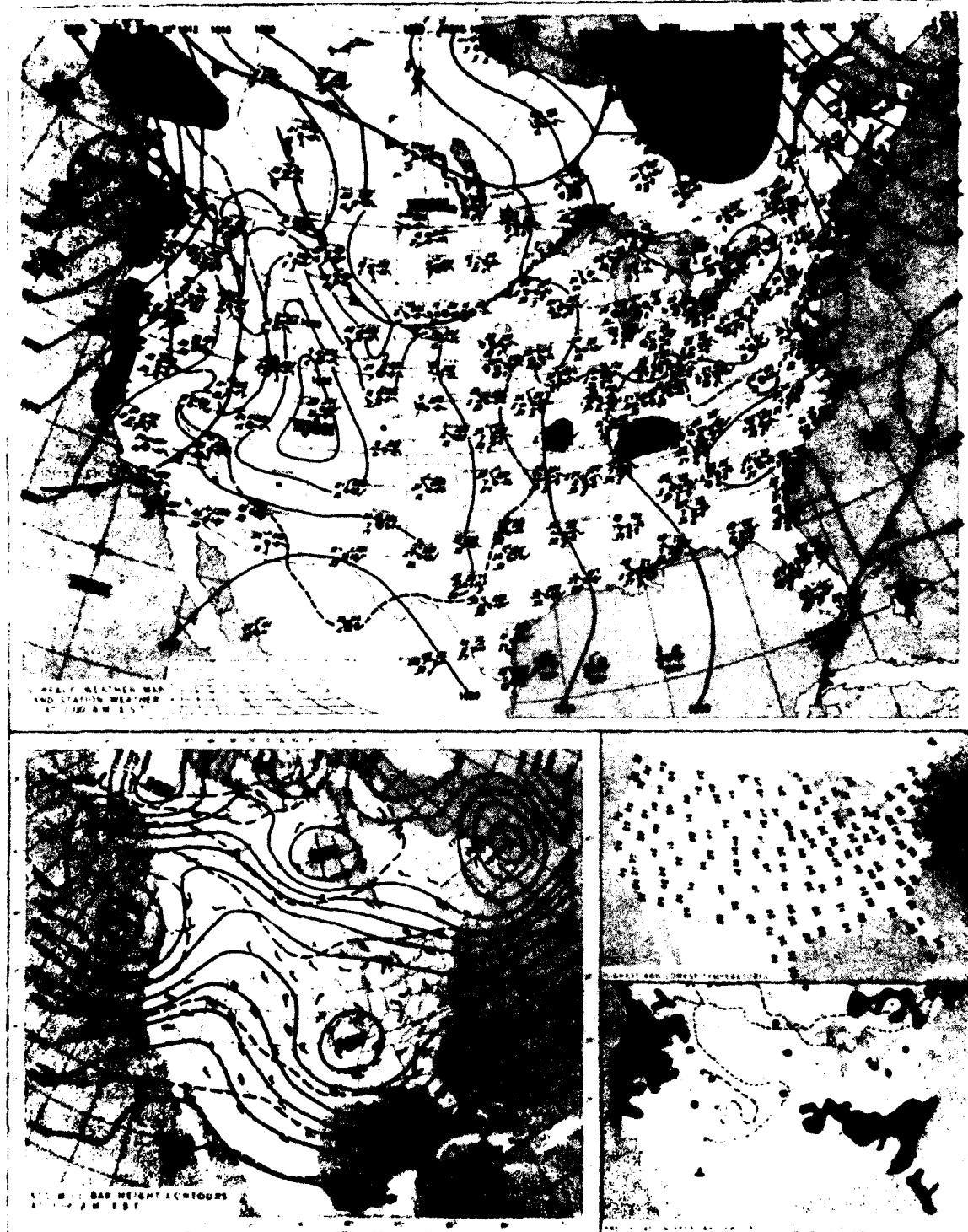


Figure 522.

TUESDAY, JANUARY 1, 1968

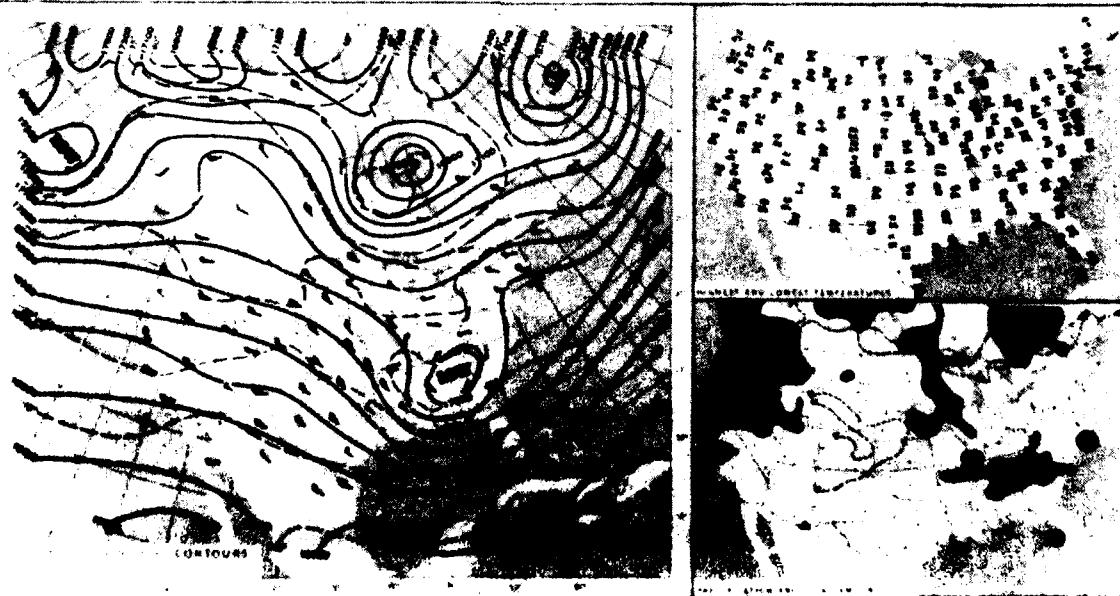
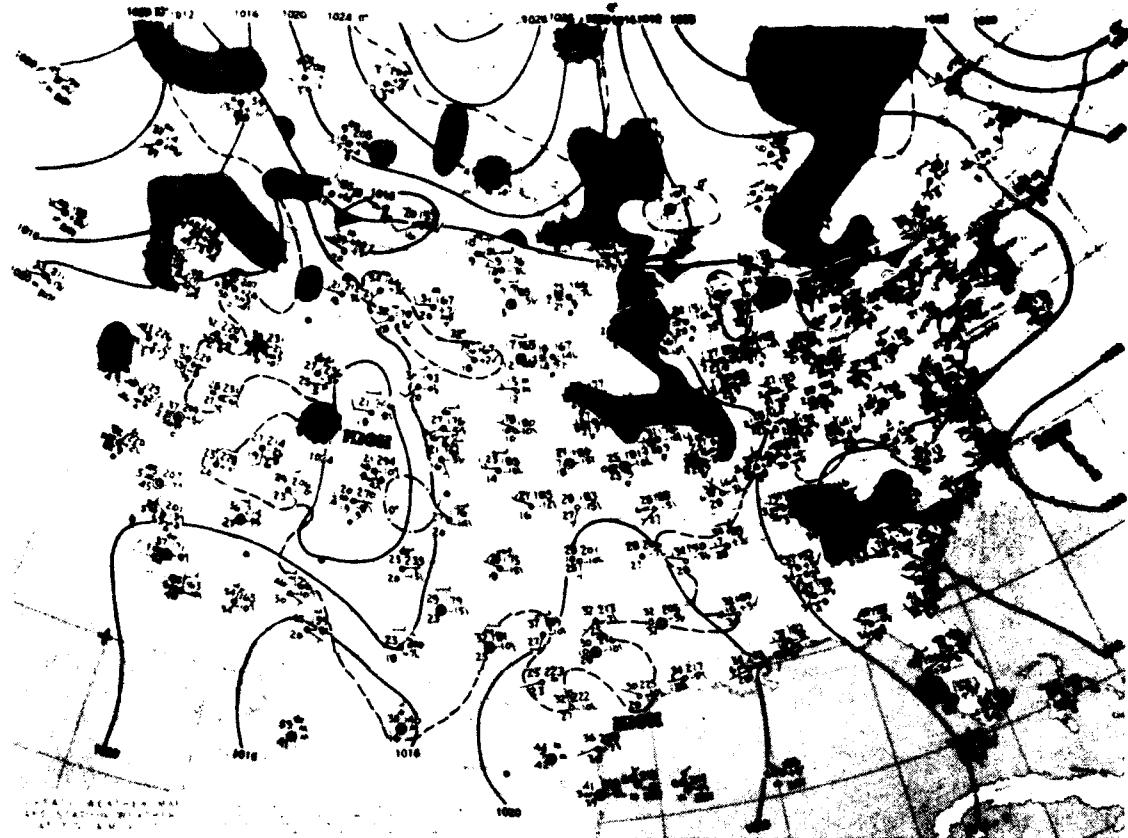


Figure 523.

WEDNESDAY JANUARY 2 1968

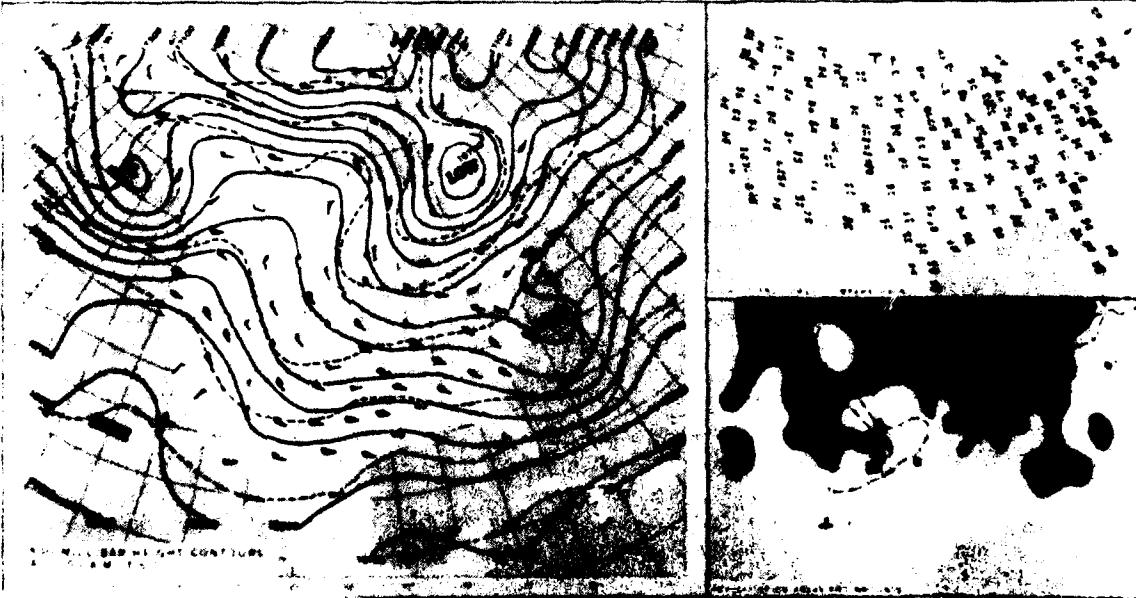


Figure 524.

THURSDAY, JANUARY 1, 1964

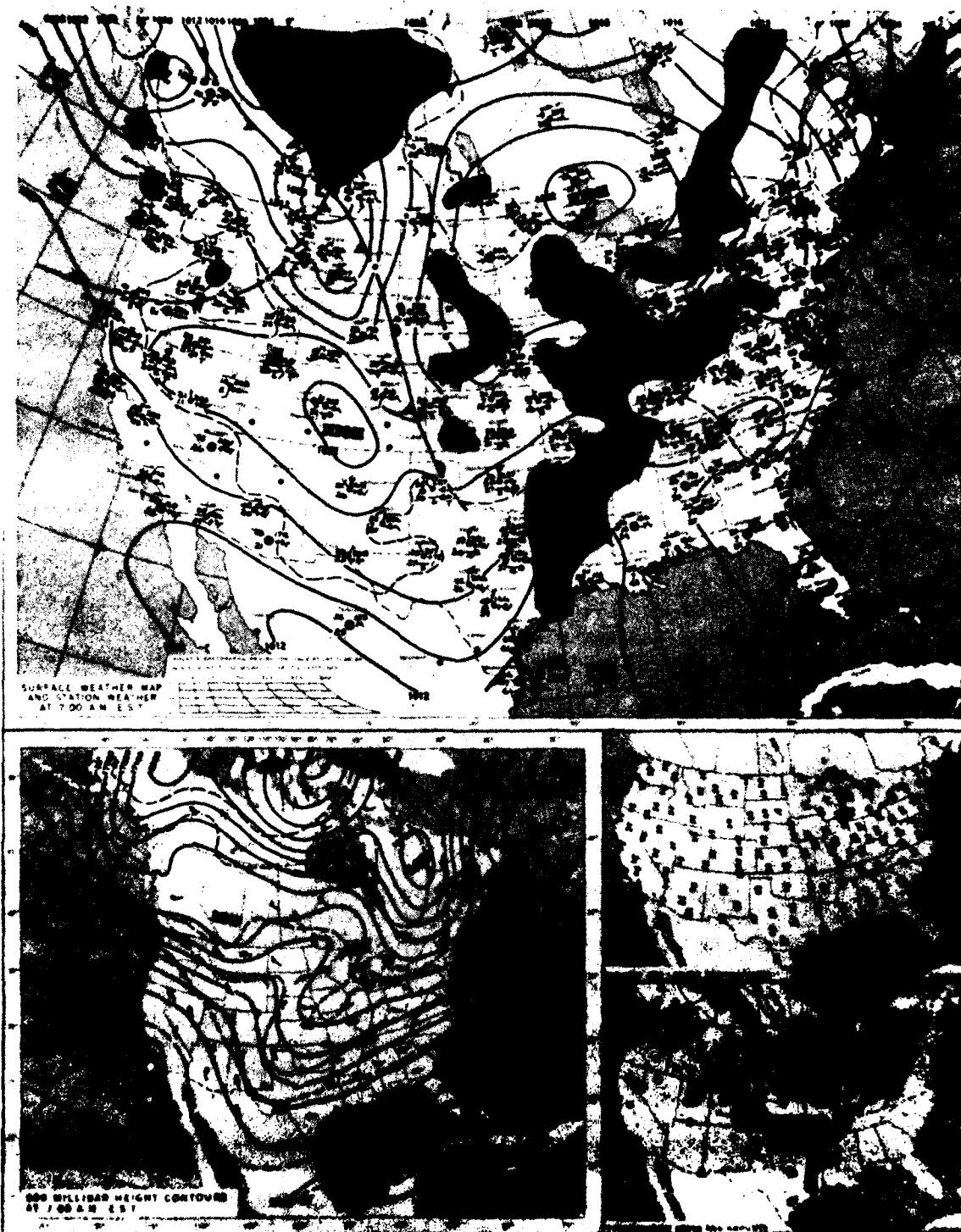


Figure 525.

FRI 11 JANUARY 6 1960

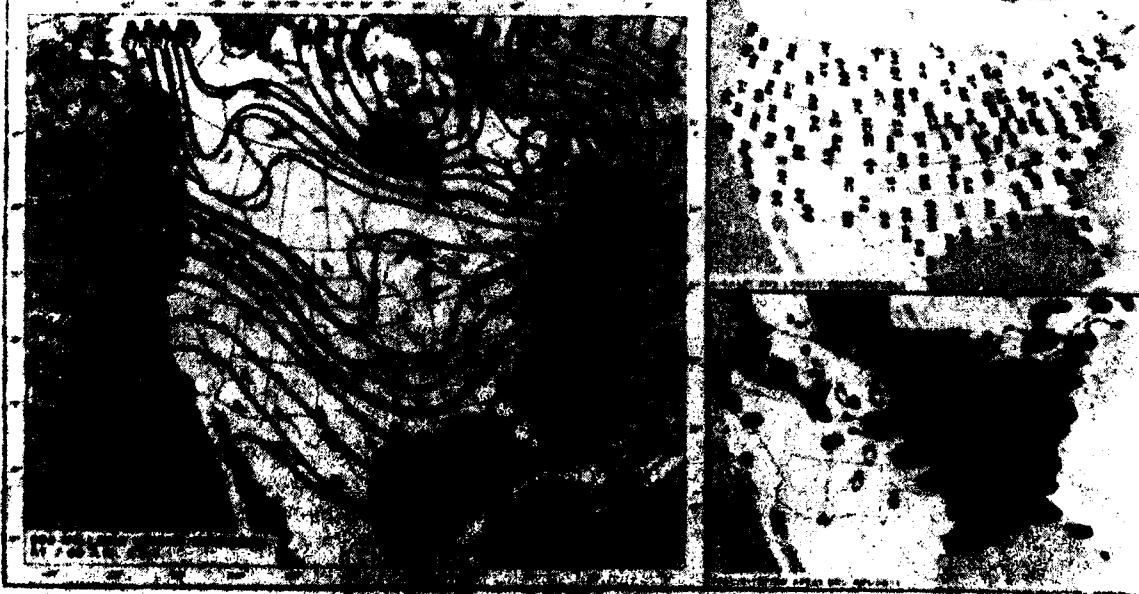


Figure 526.

BALTIMORE, JANUARY 4, 1968

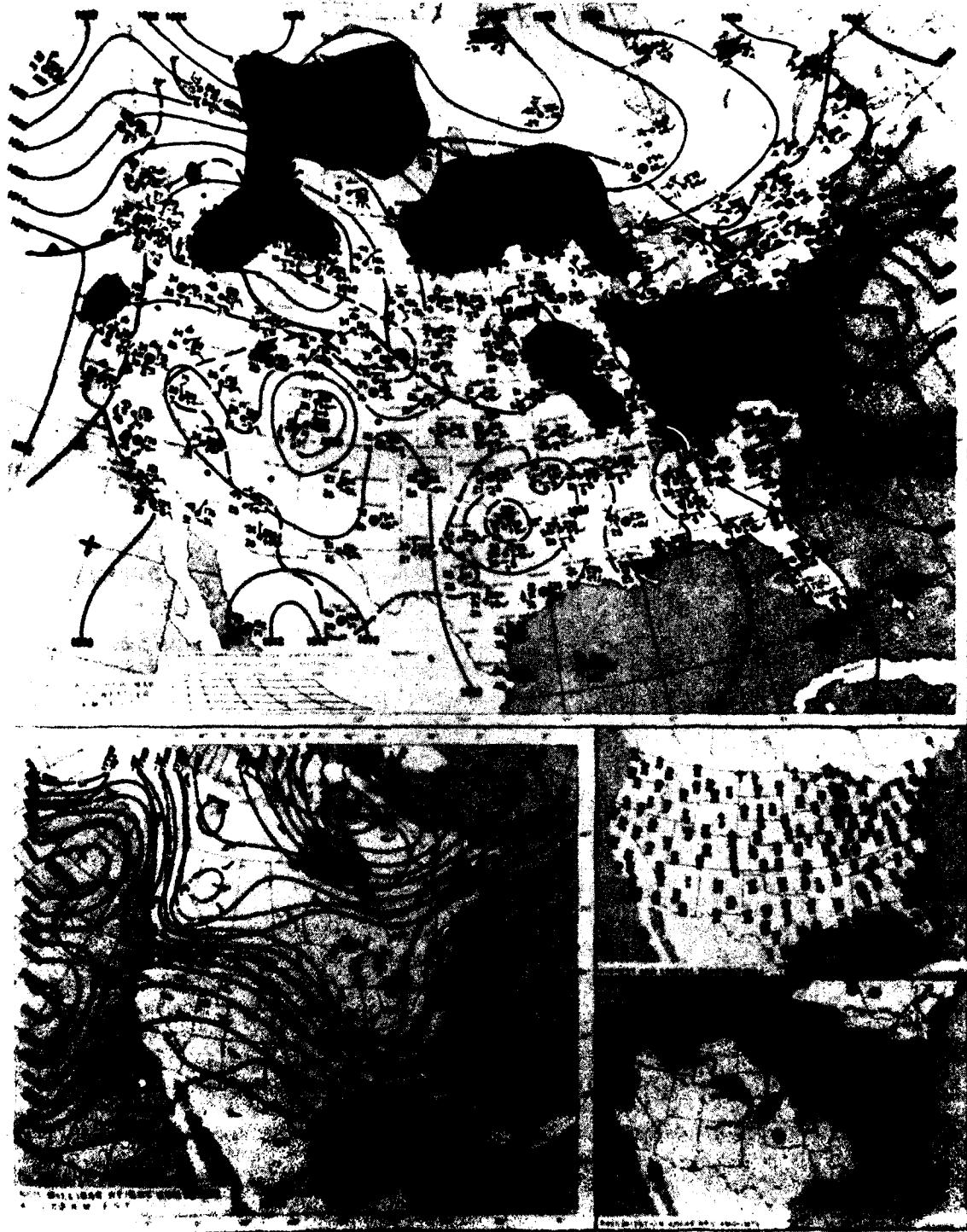


Figure 527.

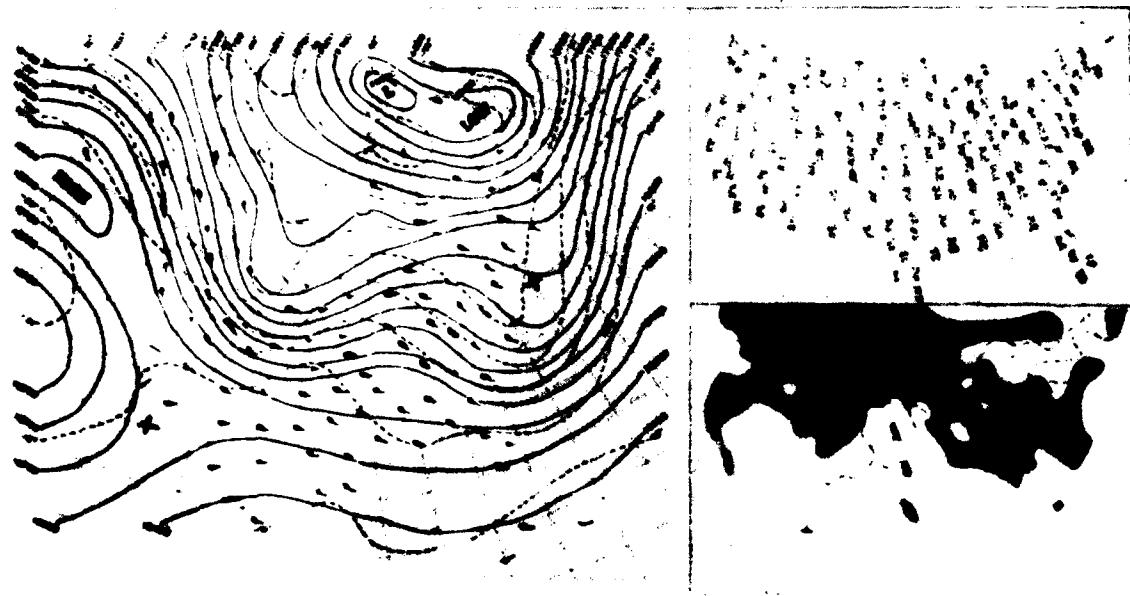
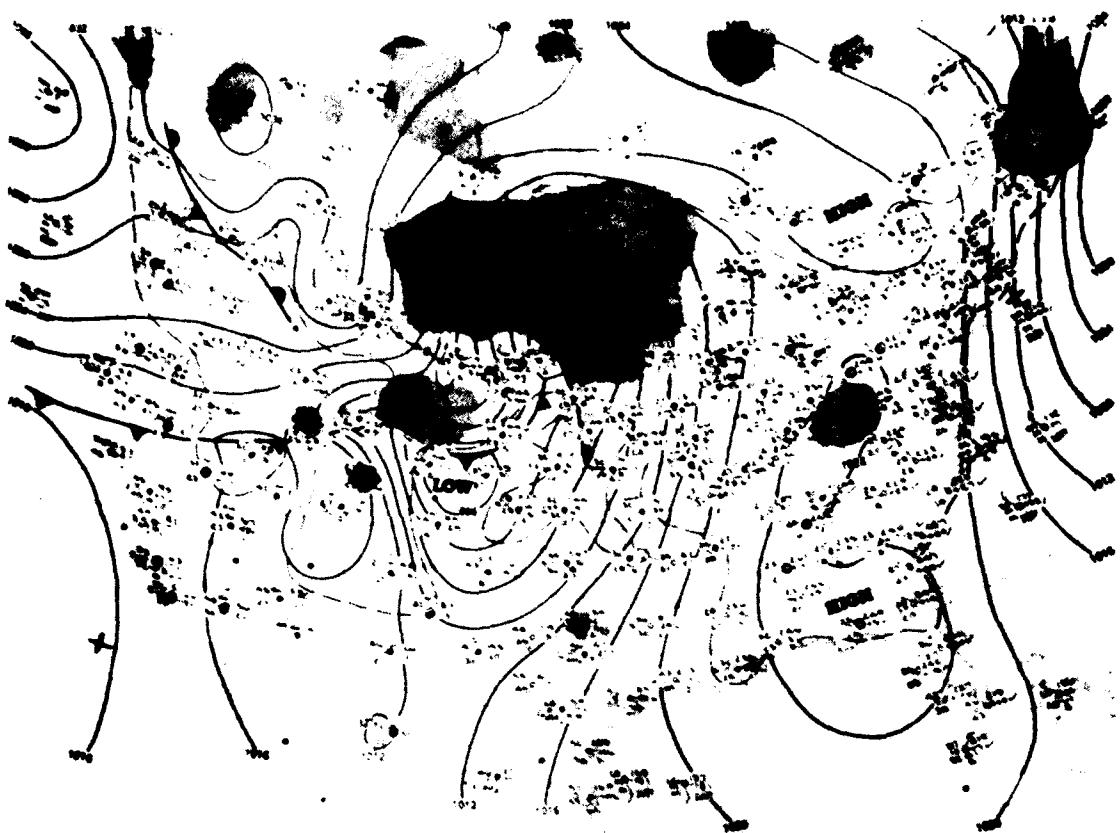


Figure 528.

MONDAY JANUARY 2 1960



Figure 529.

TUESDAY, JANUARY 6, 1964

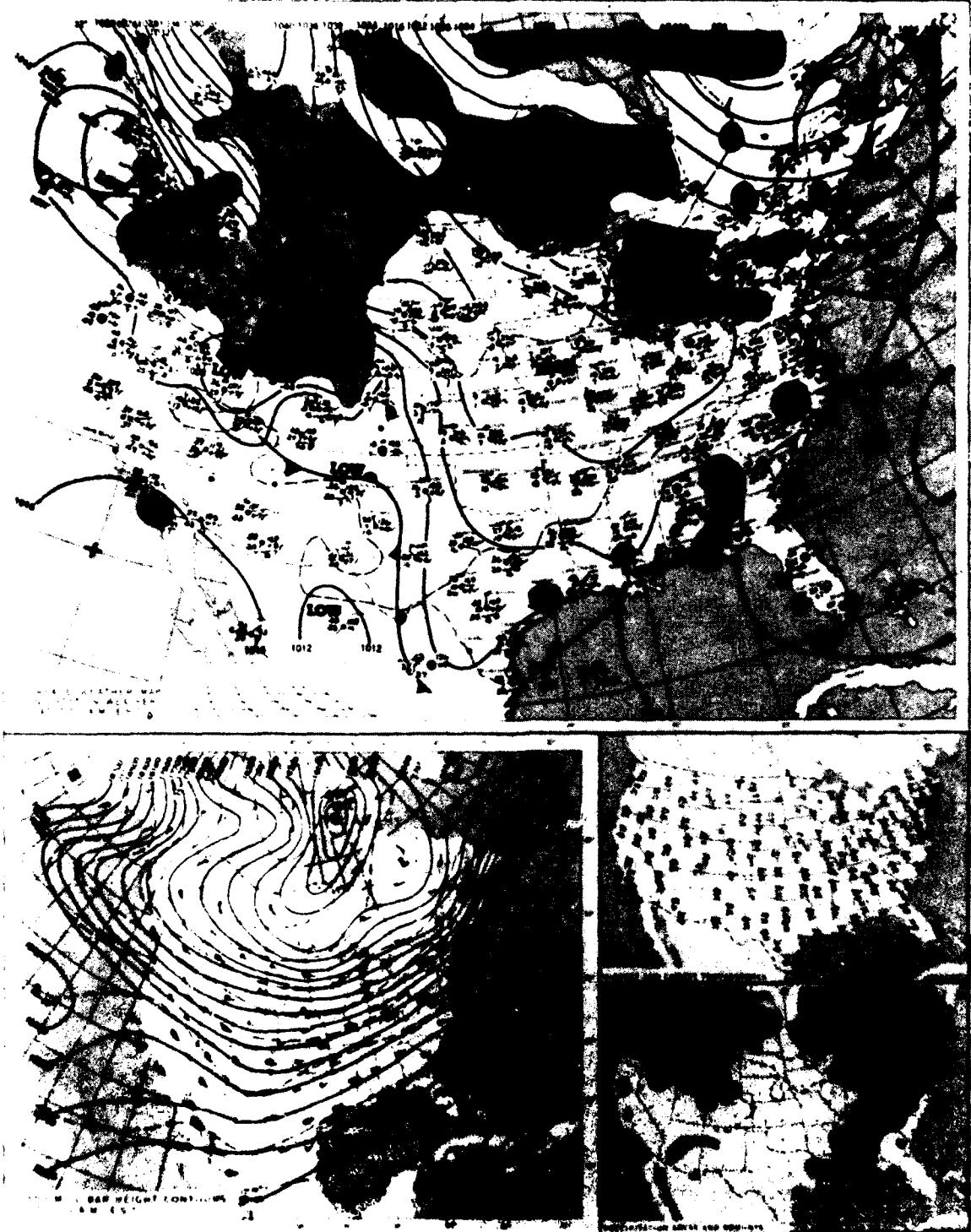


Figure 530.

WEDNESDAY JANUARY 9, 1968

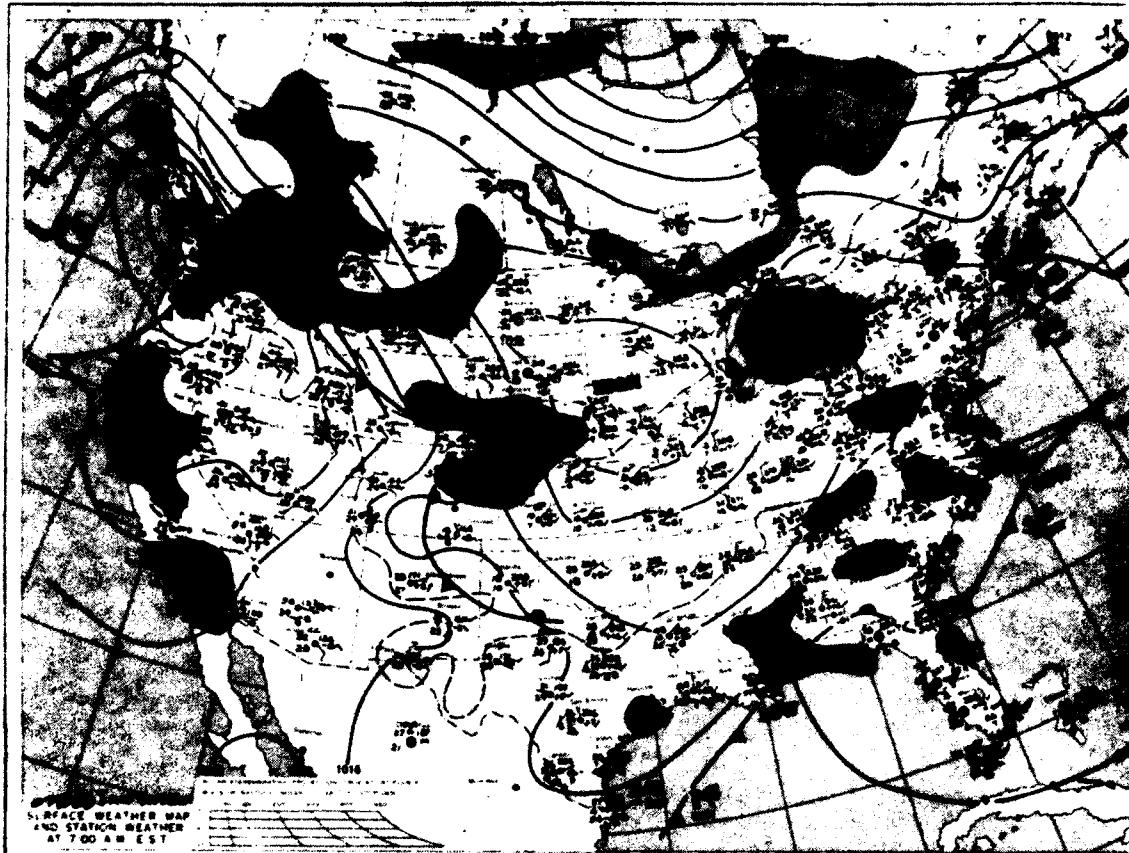


Figure 531.

THURSDAY, JANUARY 10, 1968

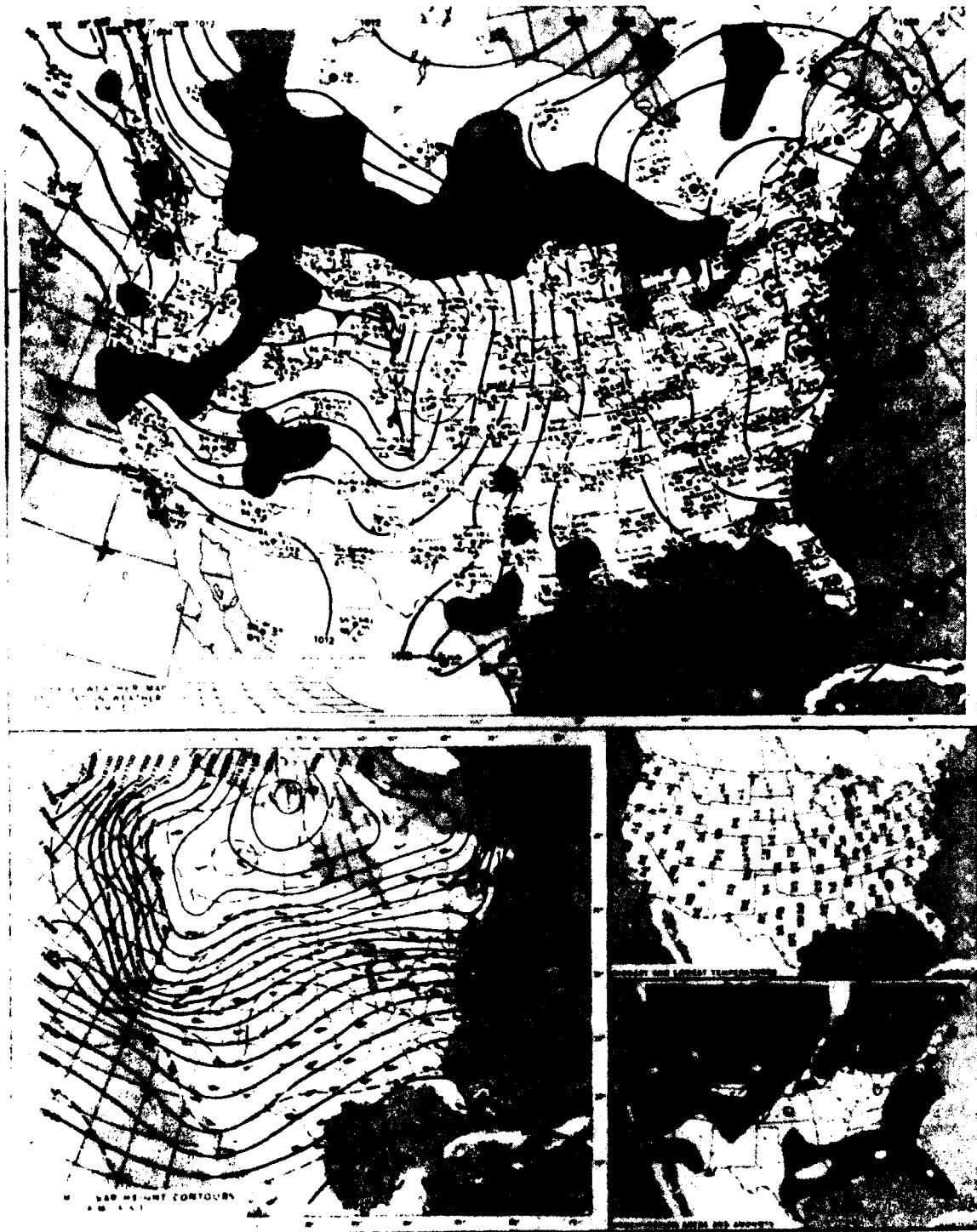


Figure 532.

FRIDAY JANUARY 21 1988

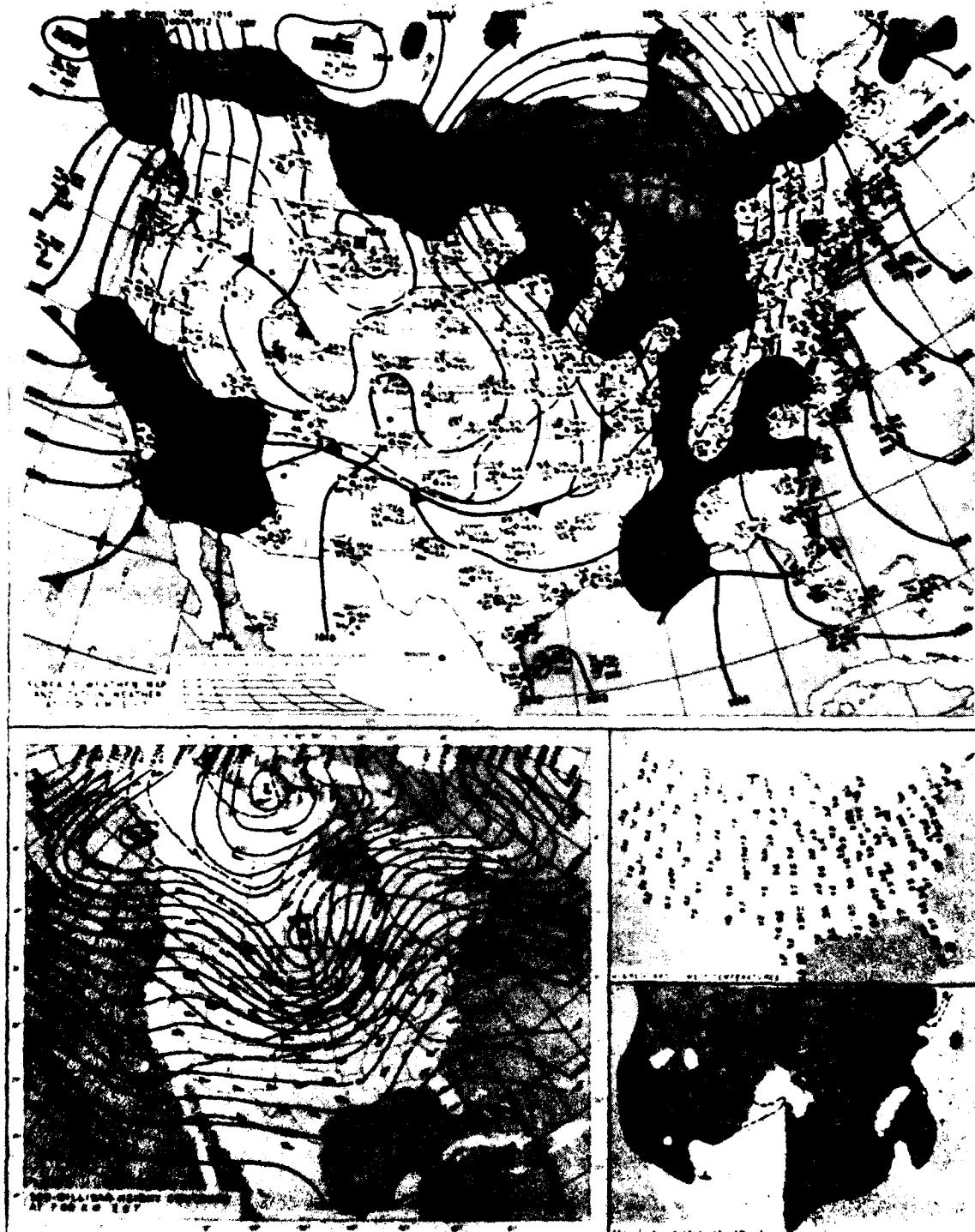


Figure 533.

SATURDAY, JANUARY 12, 1968

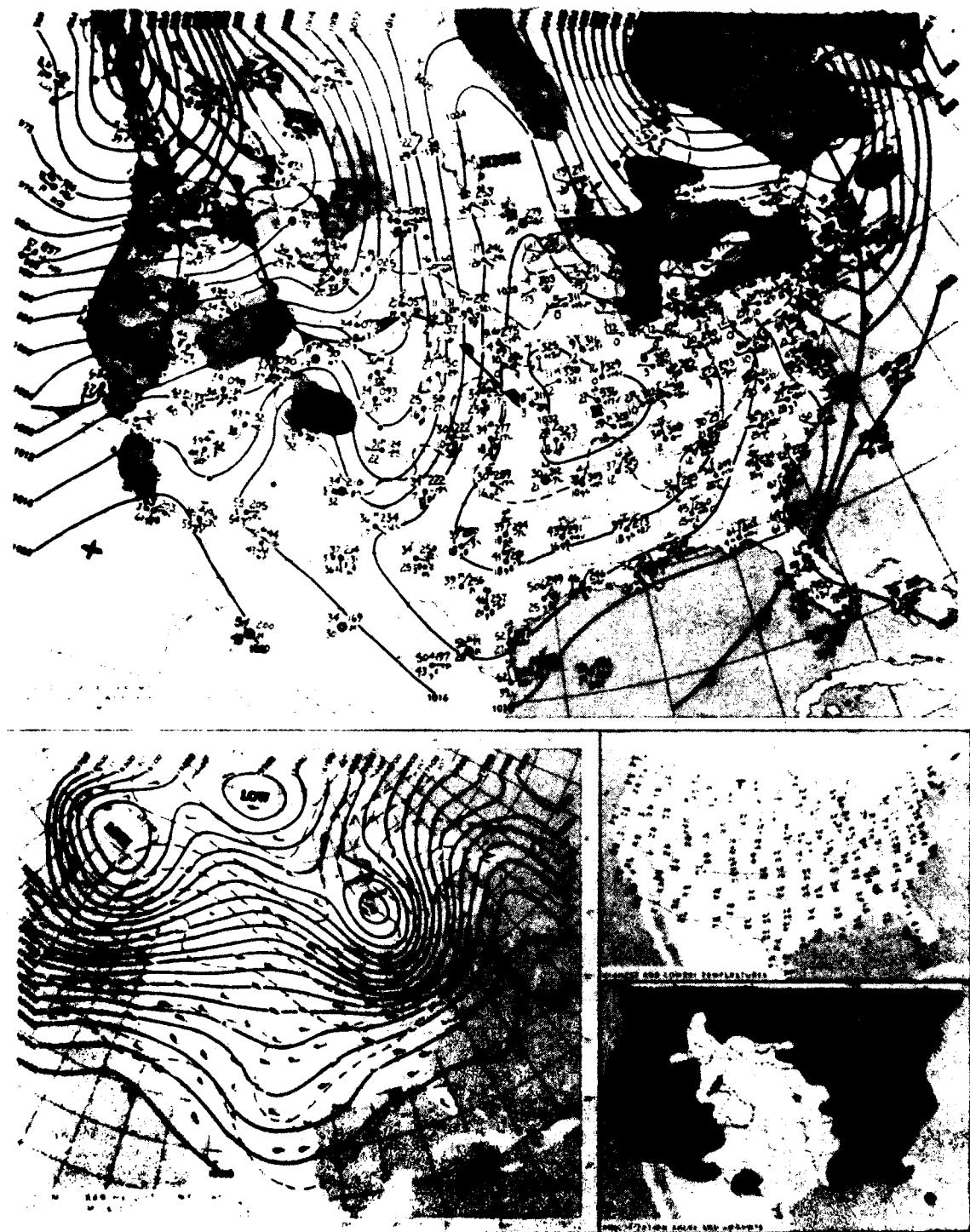


Figure 534.

SUNDAY, JANUARY 13, 1960



Figure 535.

MONDAY JANUARY 14 1968

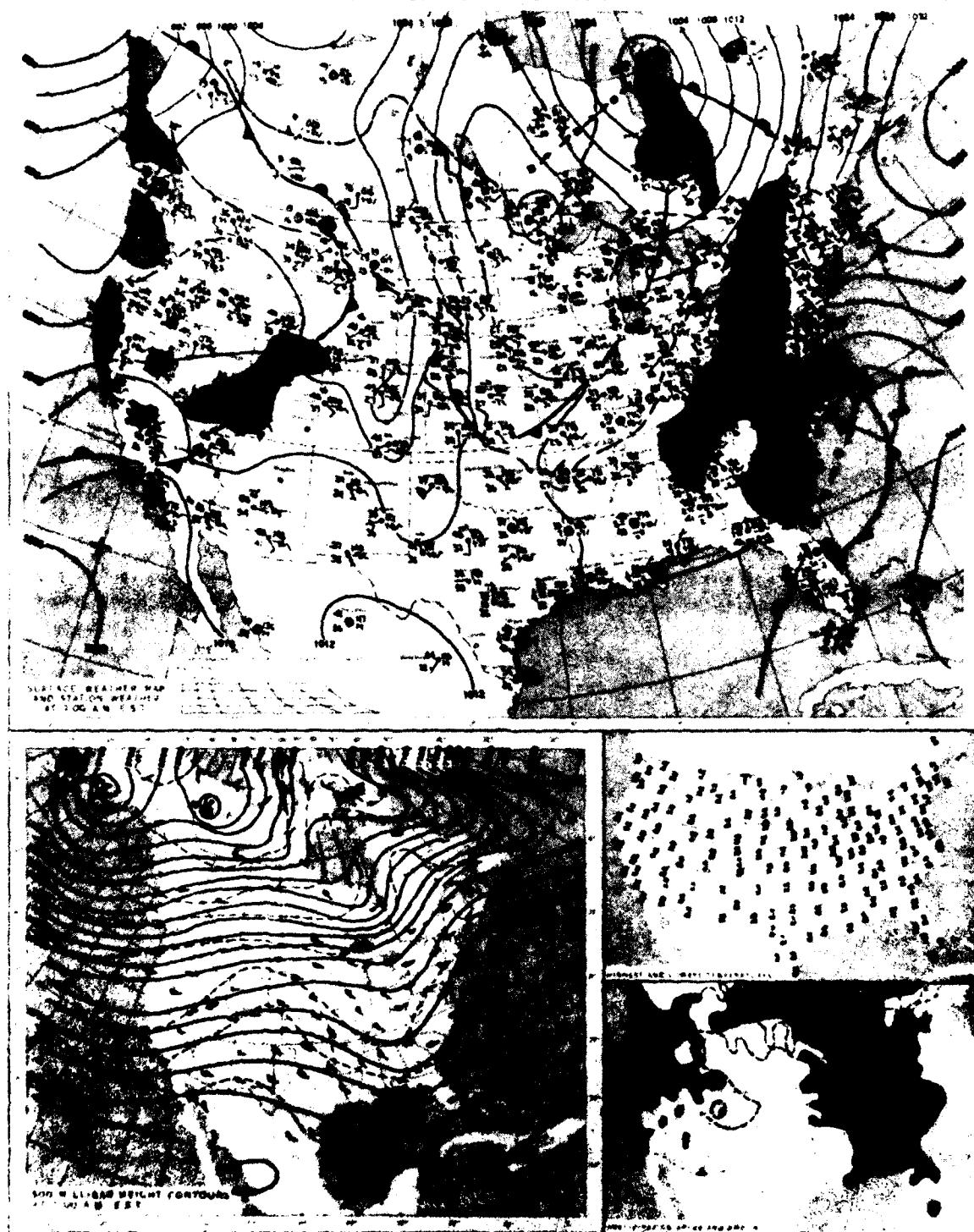


Figure 536.

TUESDAY, JANUARY 16.

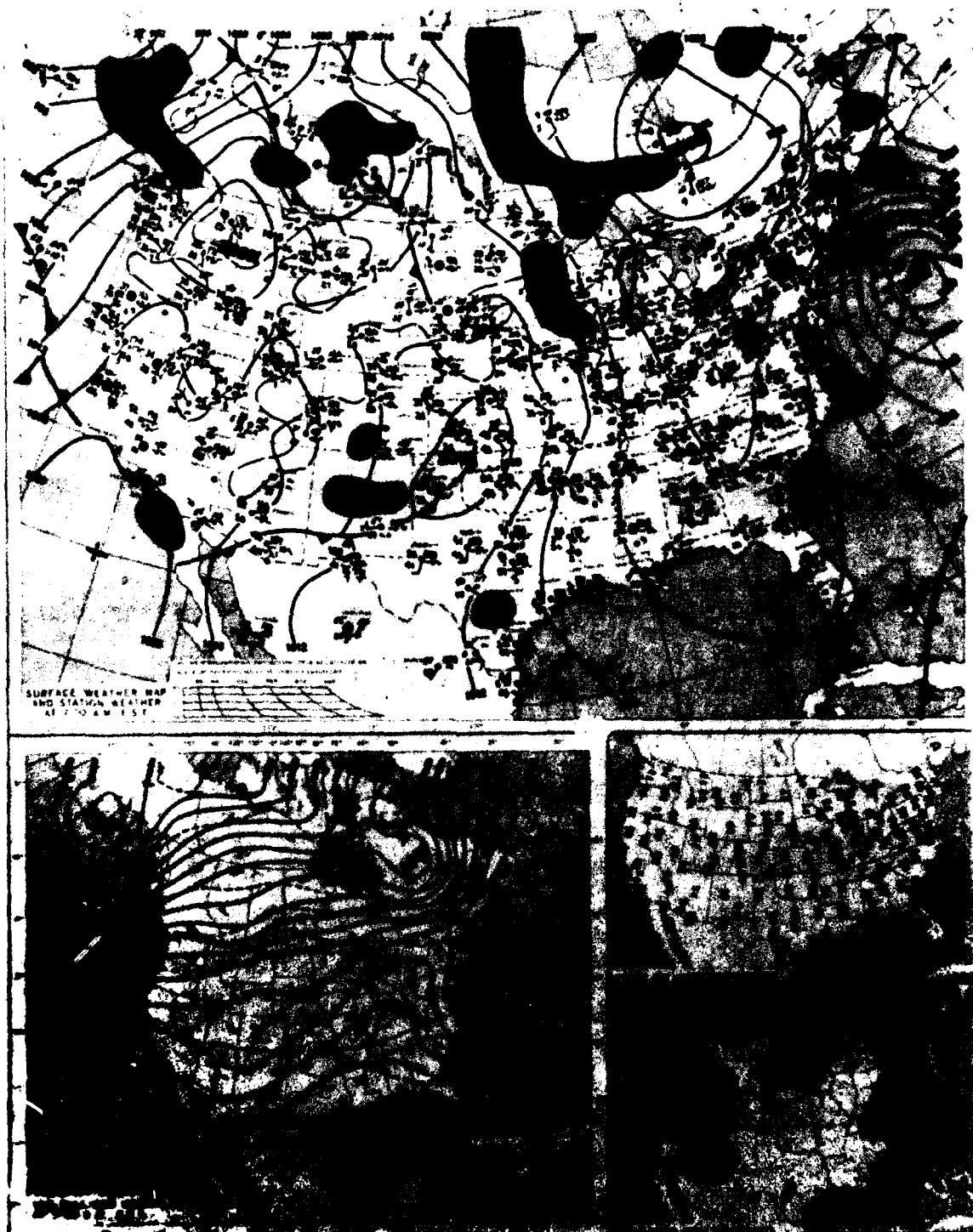


Figure 537.

WEDNESDAY, JANUARY 16, 1969



Figure 538.

THURSDAY JANUARY 11, 1968



Figure 539.

FRIDAY JANUARY 16, 1960

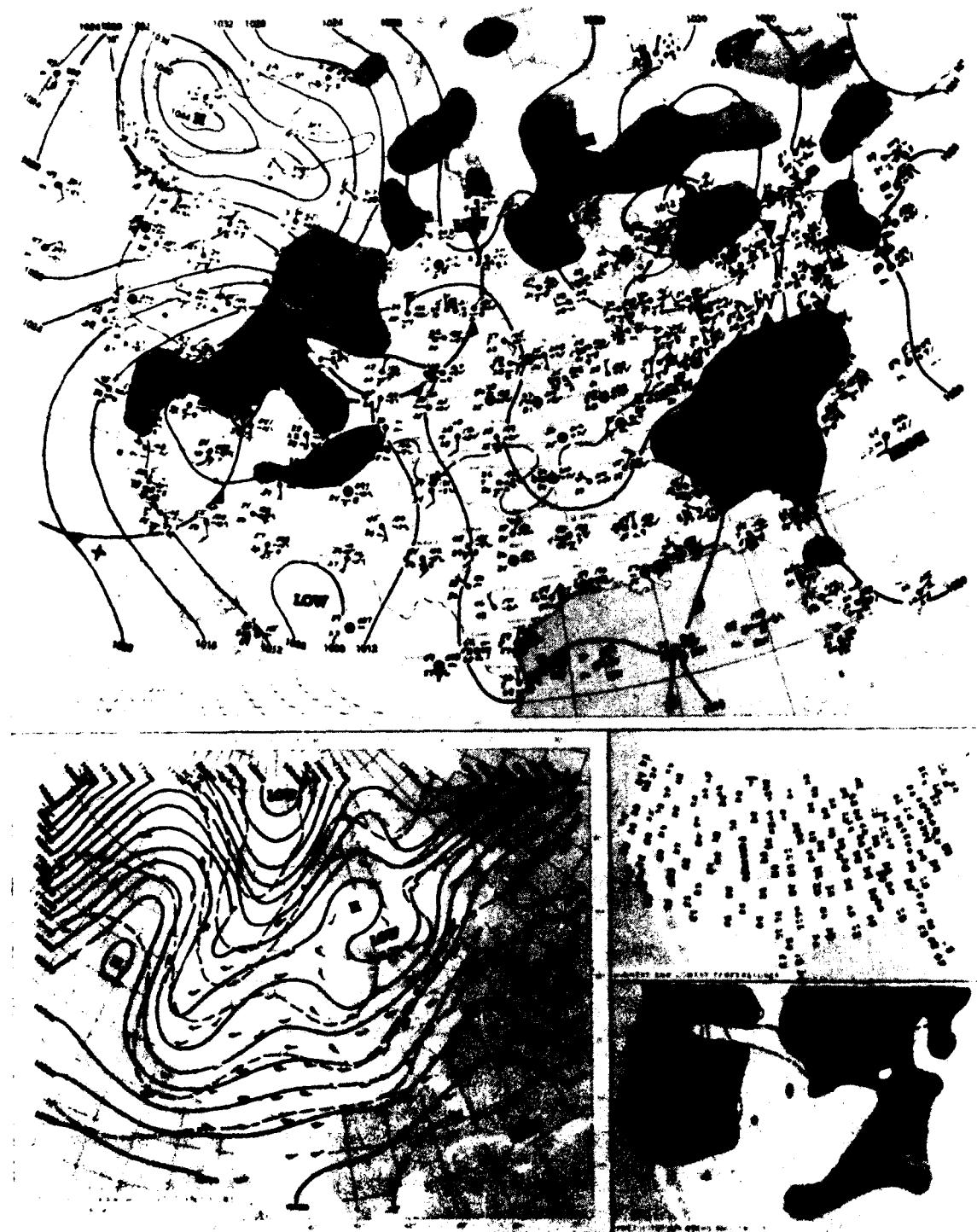


Figure 540.

SATURDAY, JANUARY 19, 1968



Figure 541.

SUNDAY JANUARY 20 1960



Figure 542.

MONDAY, JANUARY 21, 1980

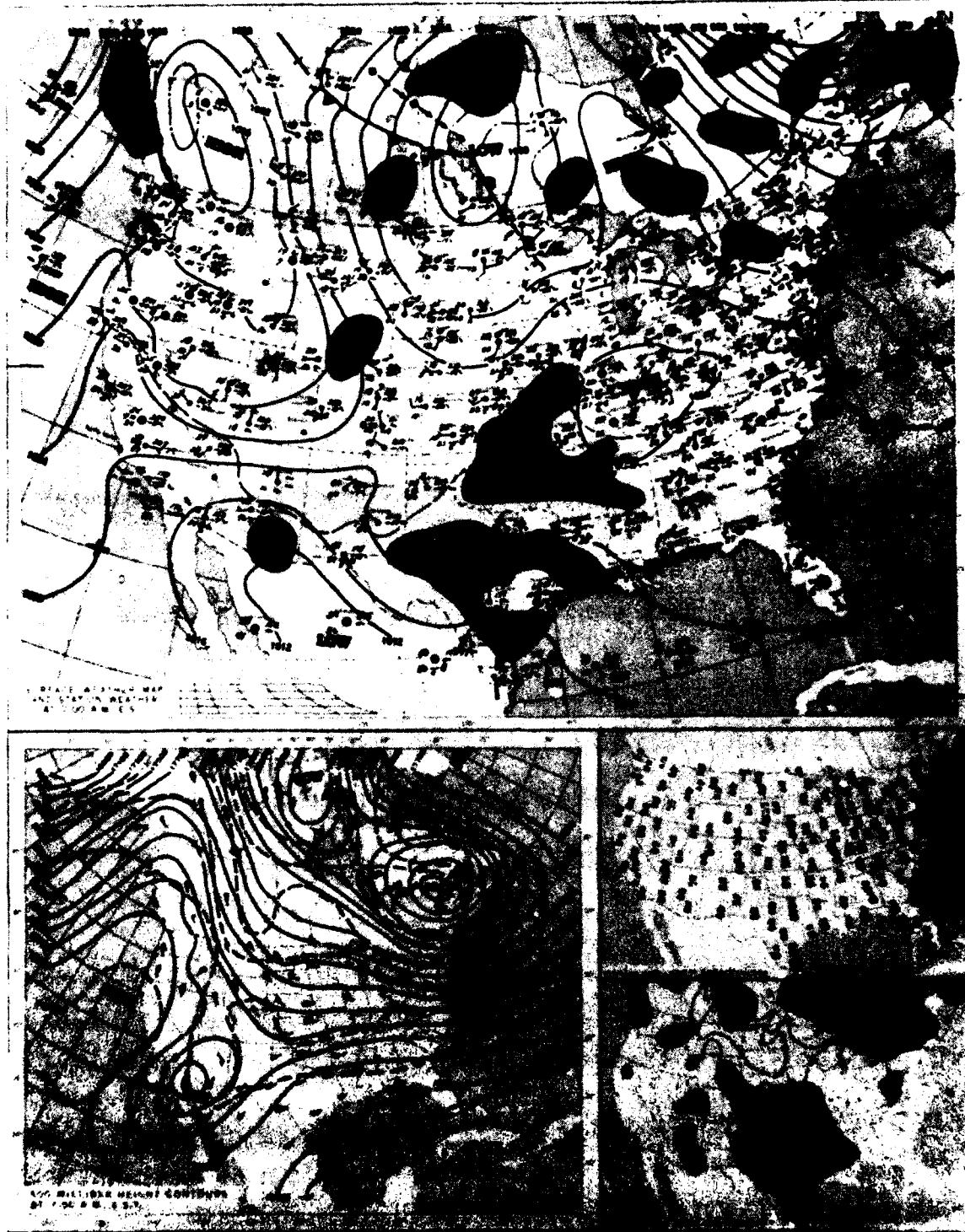


Figure 543.

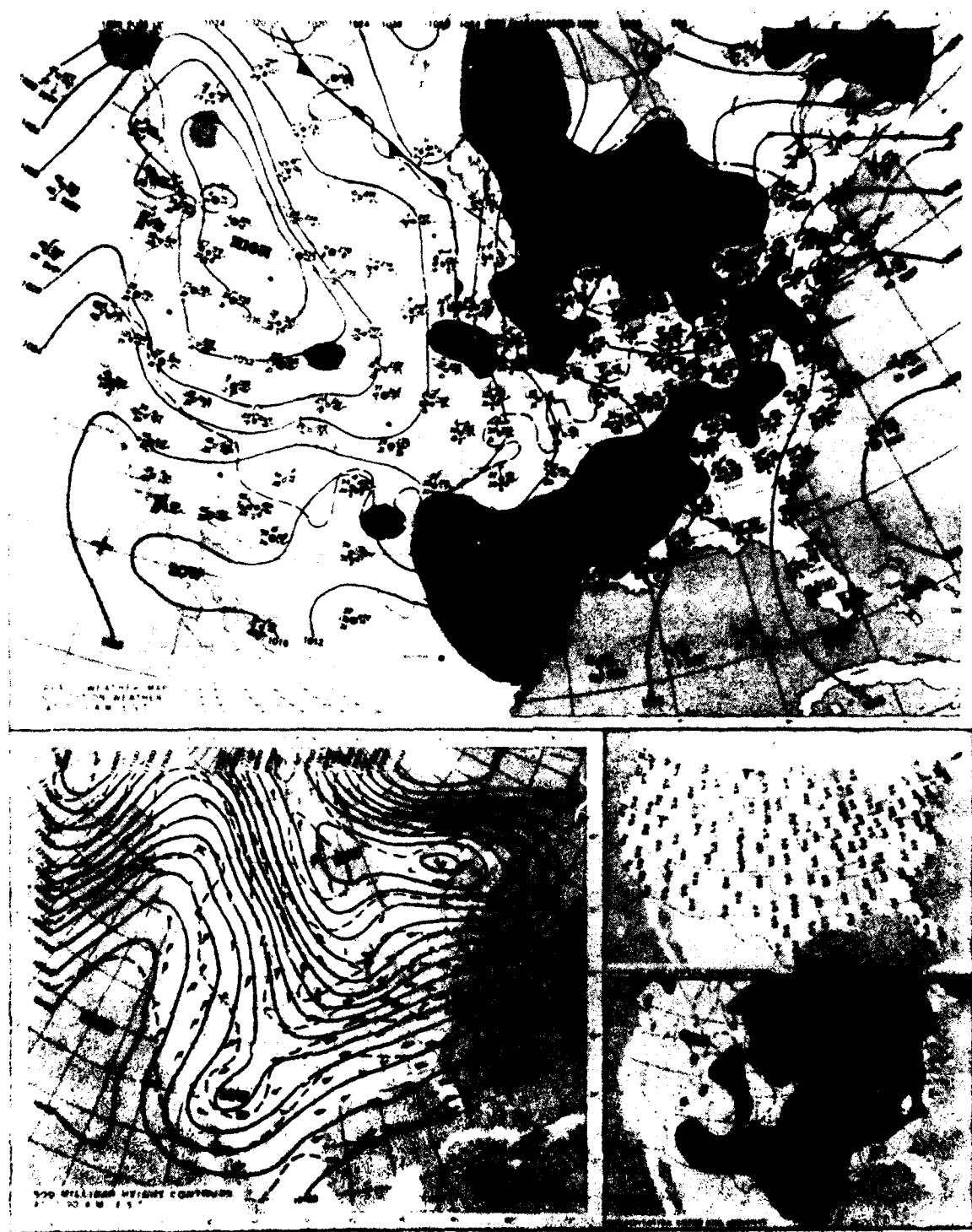


Figure 544.

WEDNESDAY, JANUARY 22, 1969



Figure 545,

THURSDAY, JANUARY 26, 1967

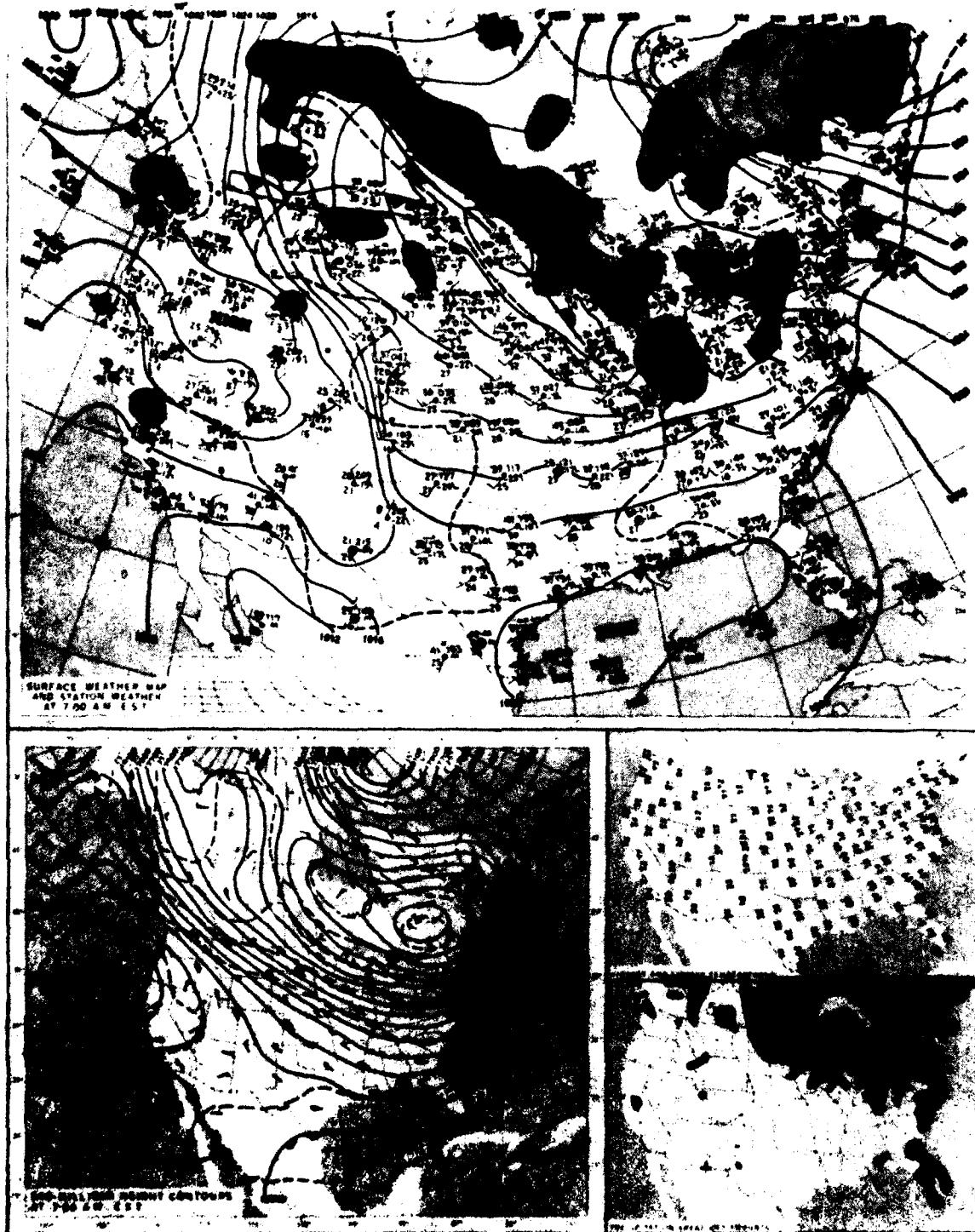


Figure 546.

FRIDAY JANUARY 25 1968

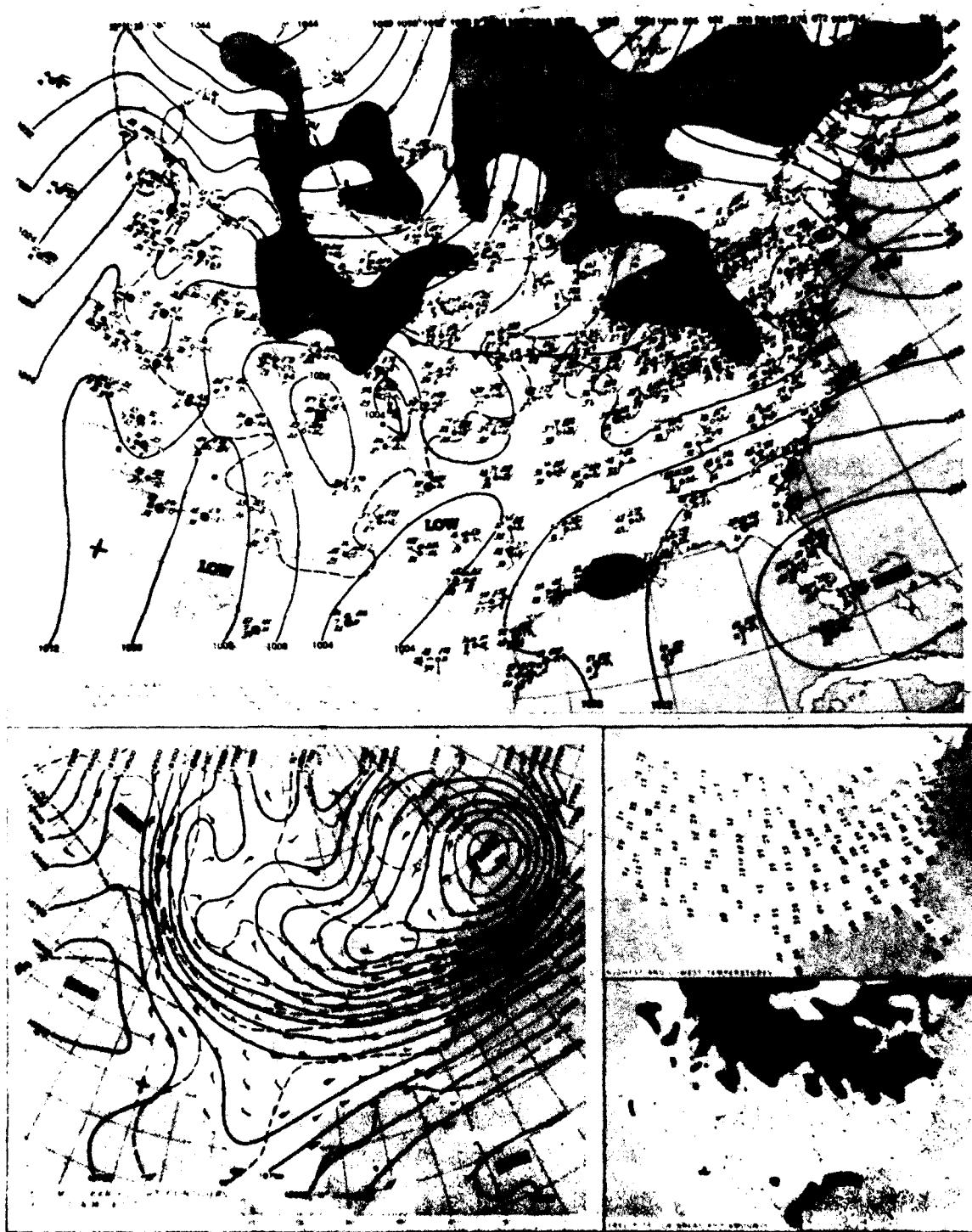


Figure 547,

SATURDAY JANUARY 26 1968

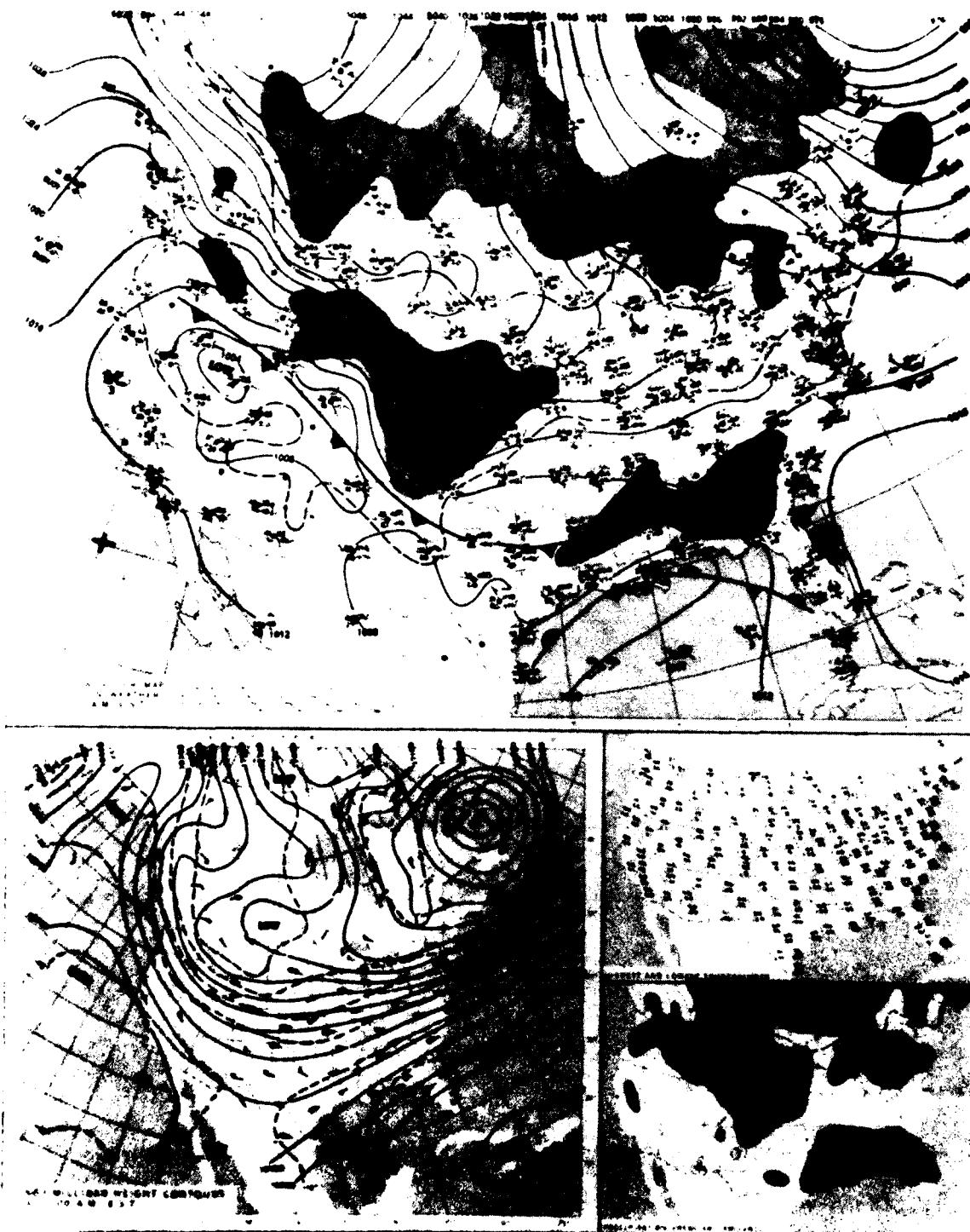


Figure 548.

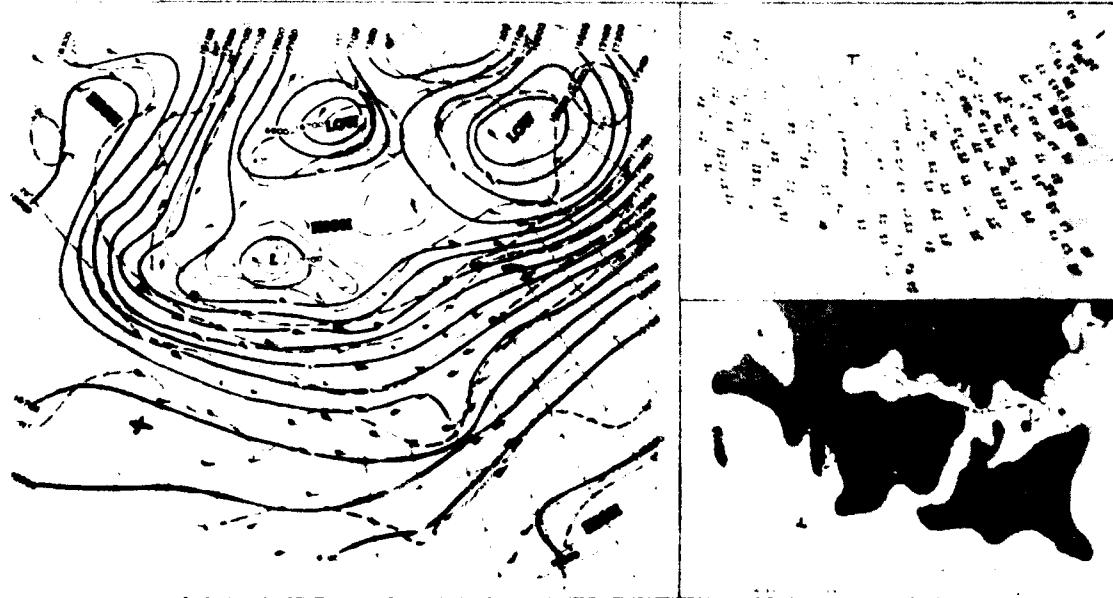
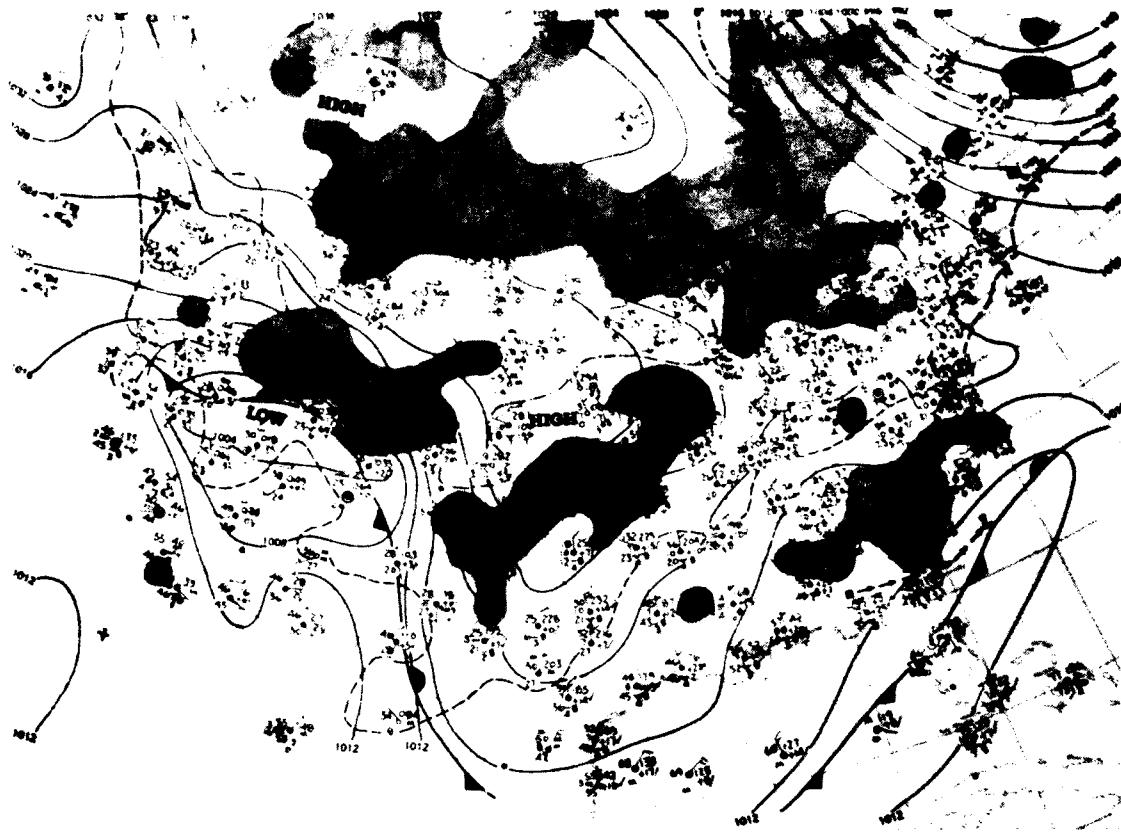


Figure 549.

6.0 ACOUSTIC TRACKING DATA (Figures 551-553)

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OCT 80 K D SAUNDERS, A W GREEN, M T BERGIN

UNCLASSIFIED

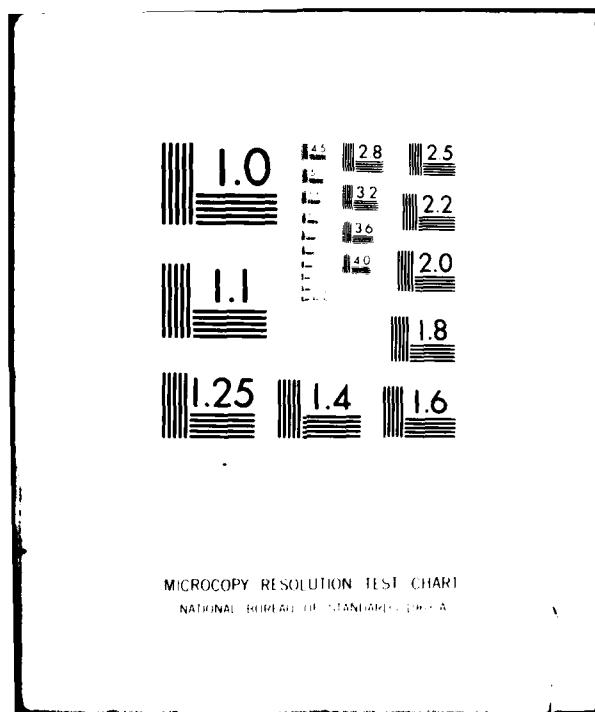
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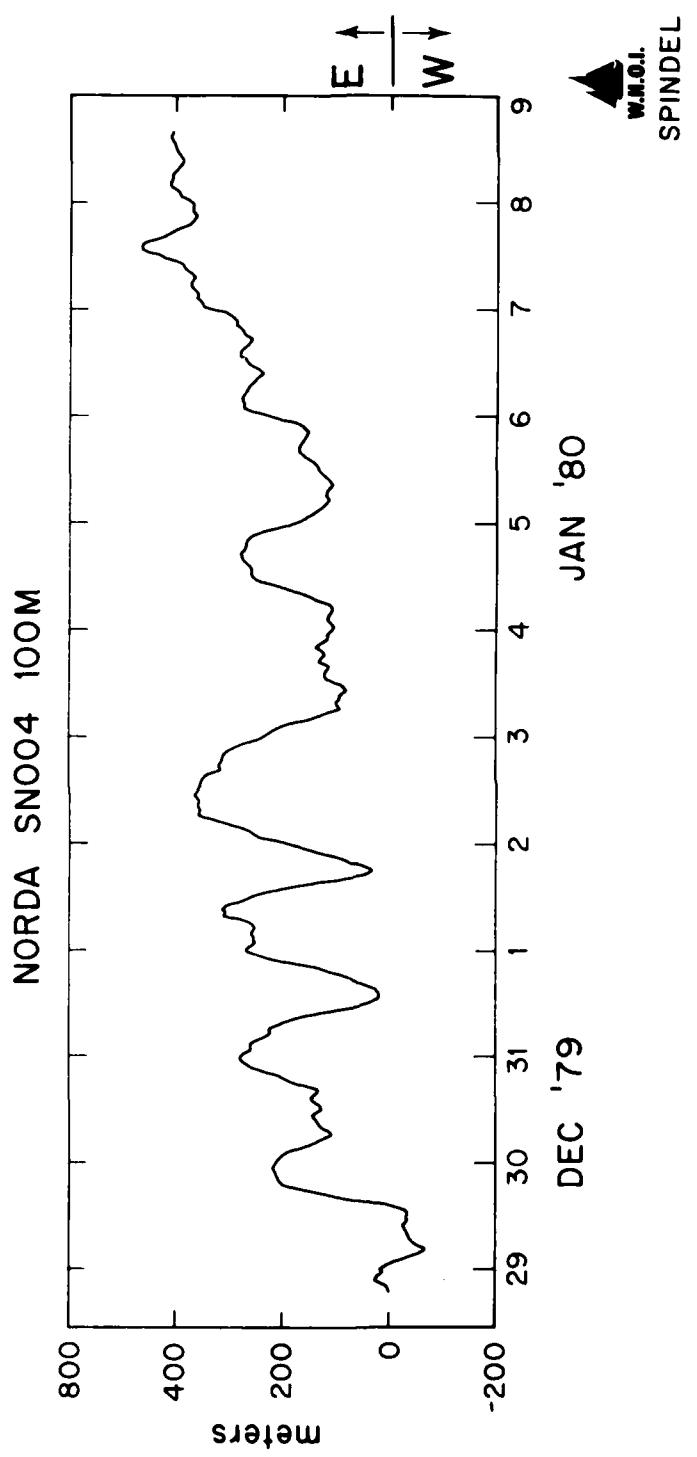


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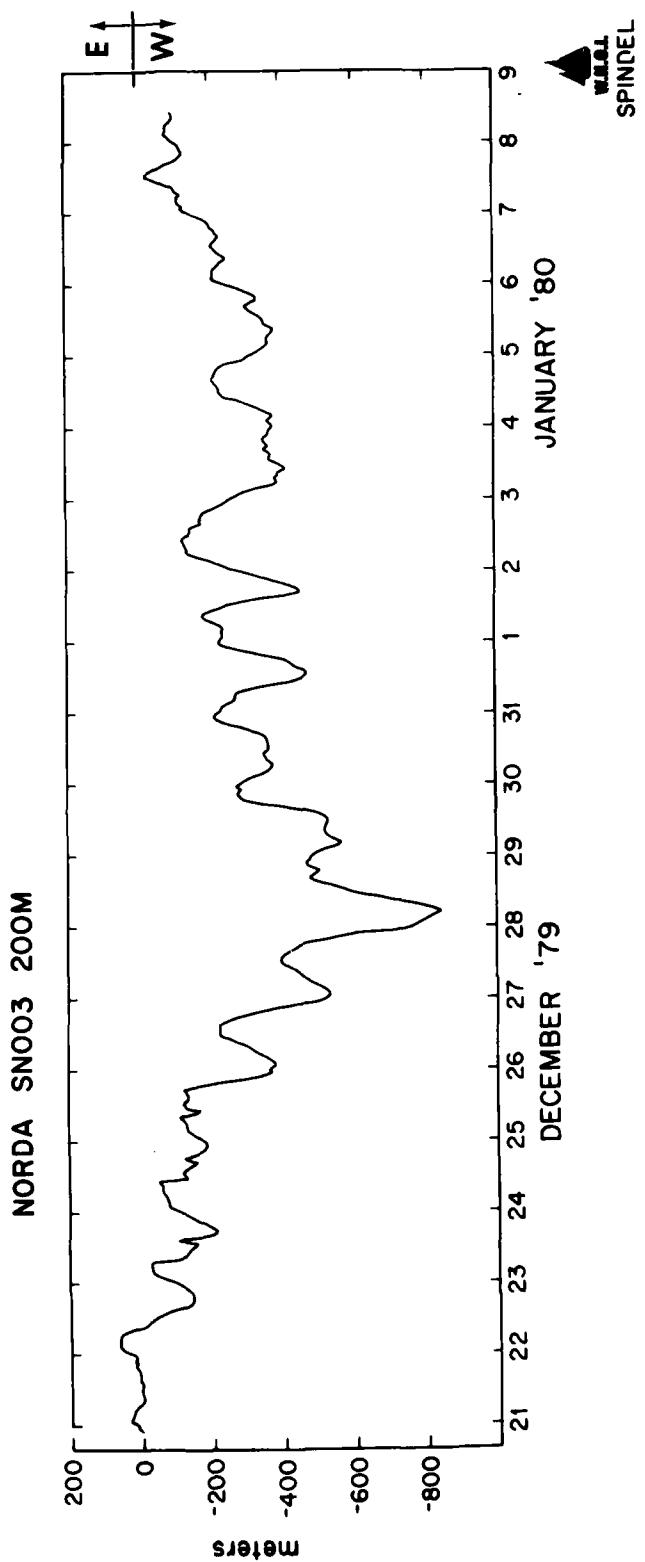


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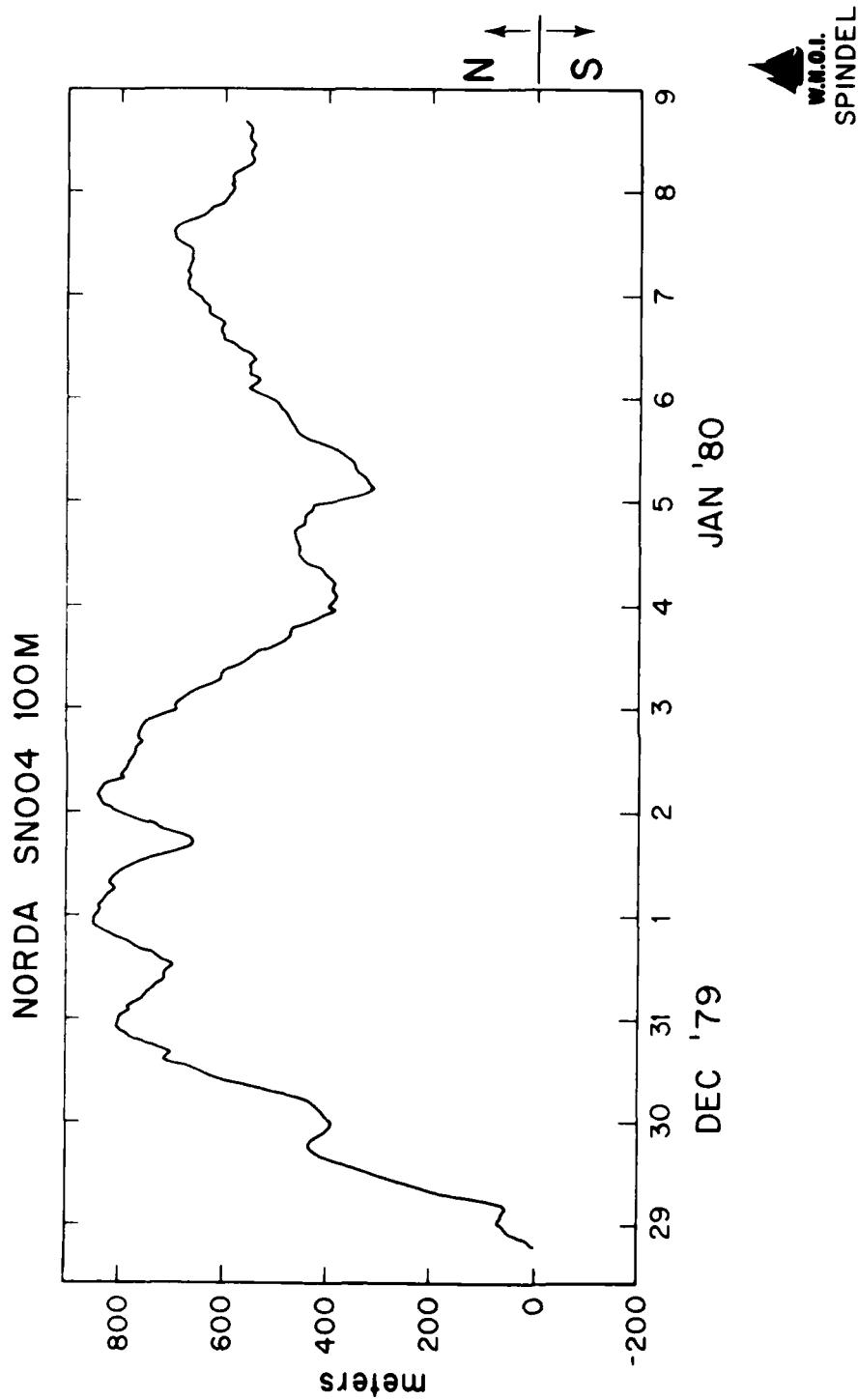


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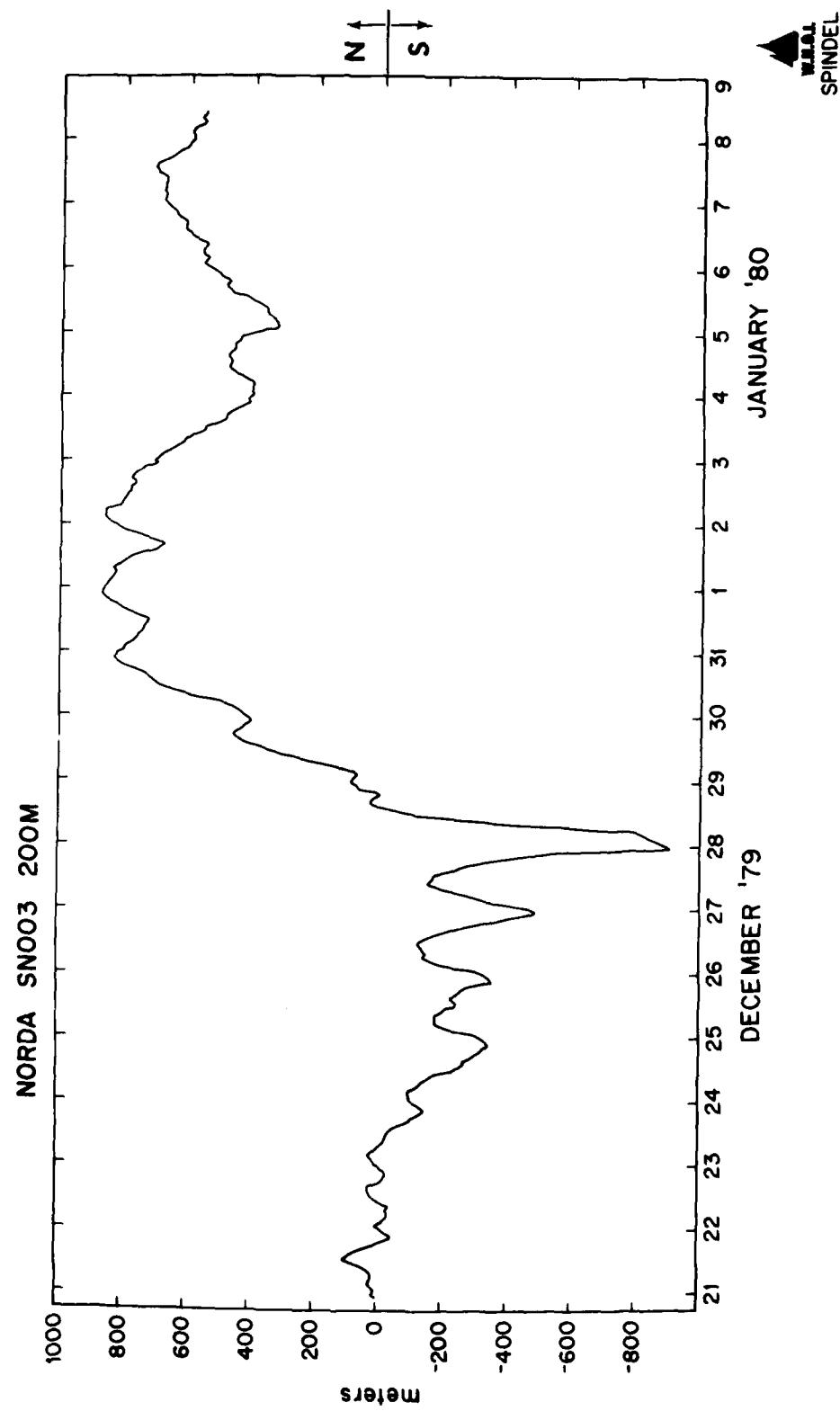


Figure 553.

7.0 Expendable Current Probe (XCP) Data (Figs. 554-598)

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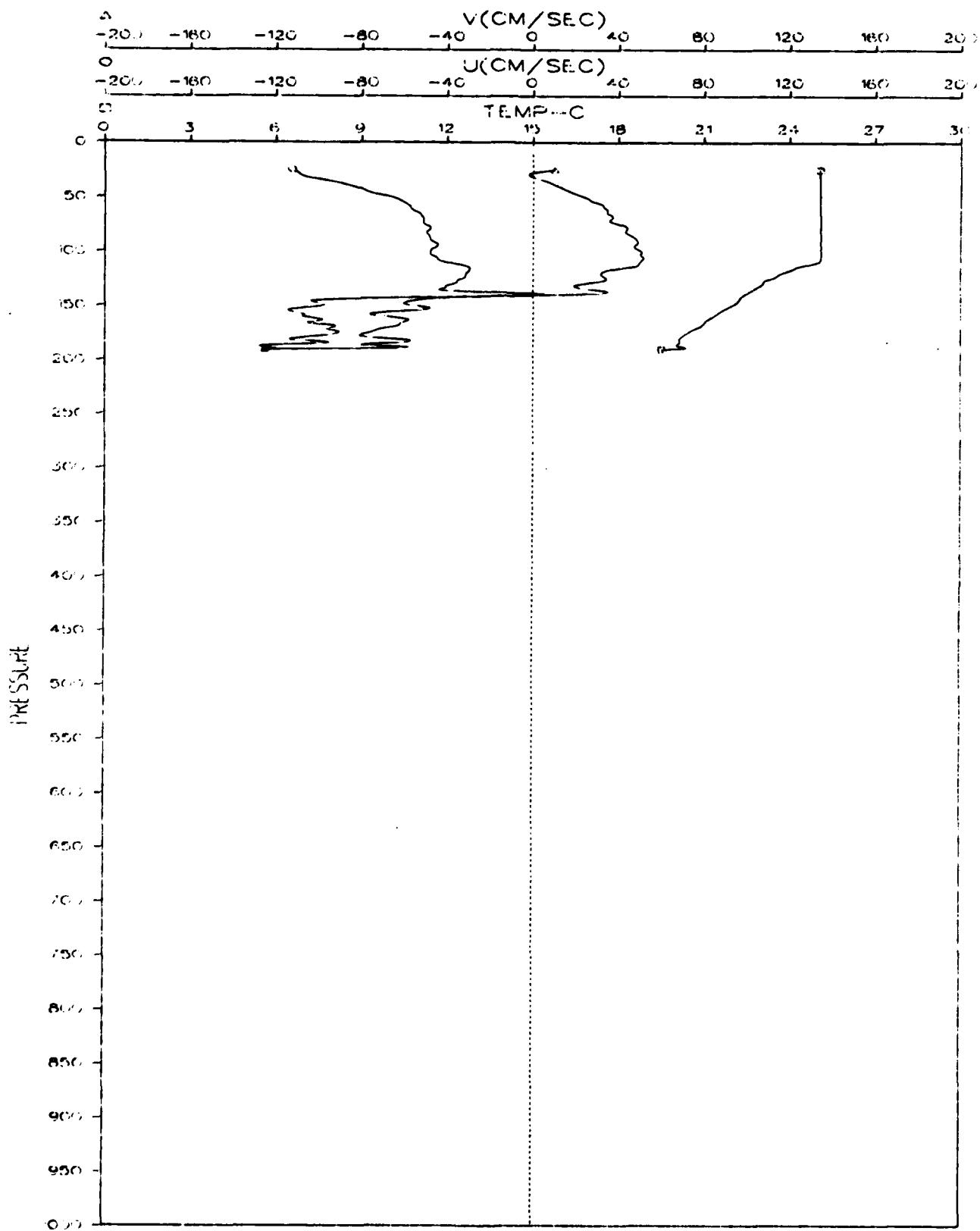


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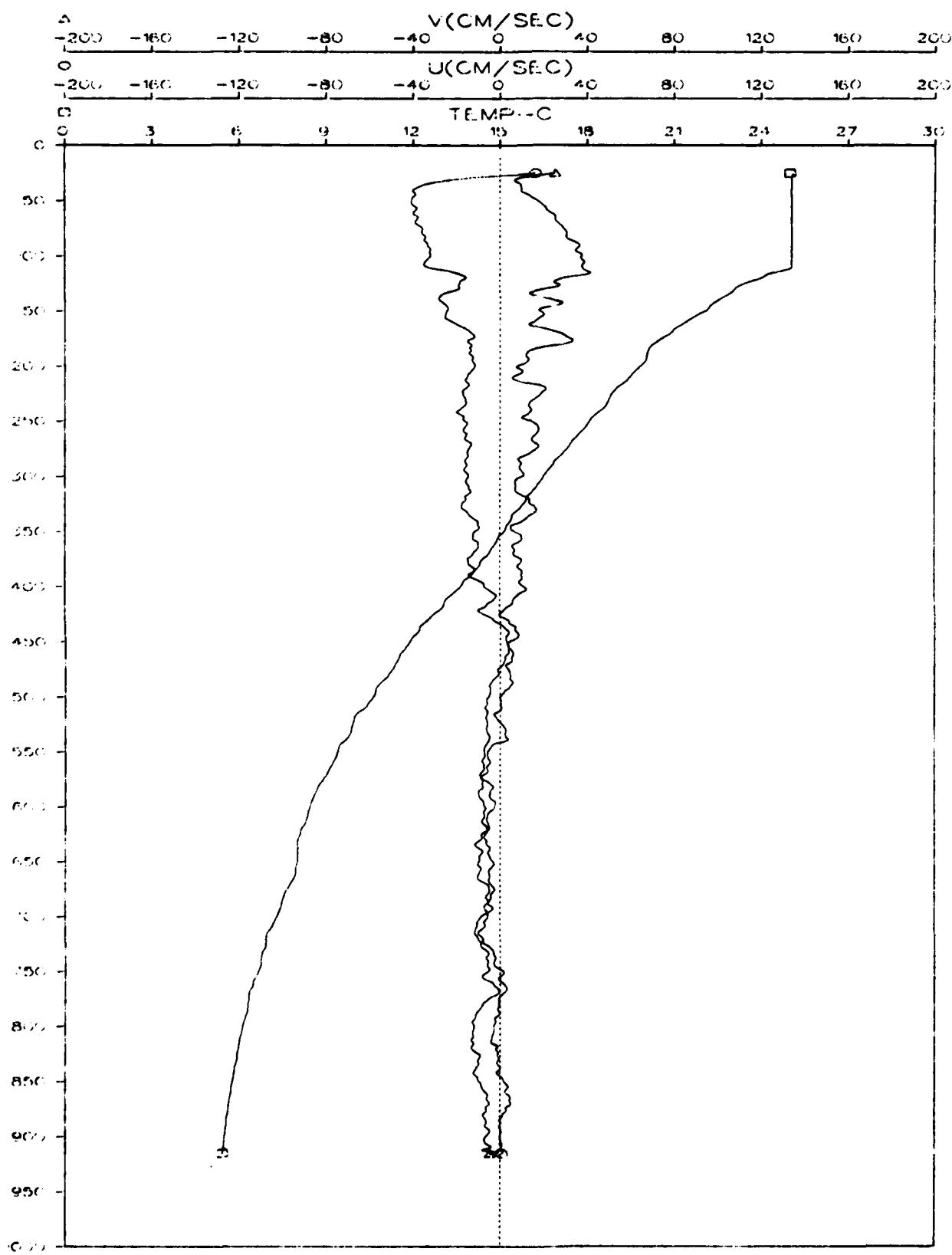


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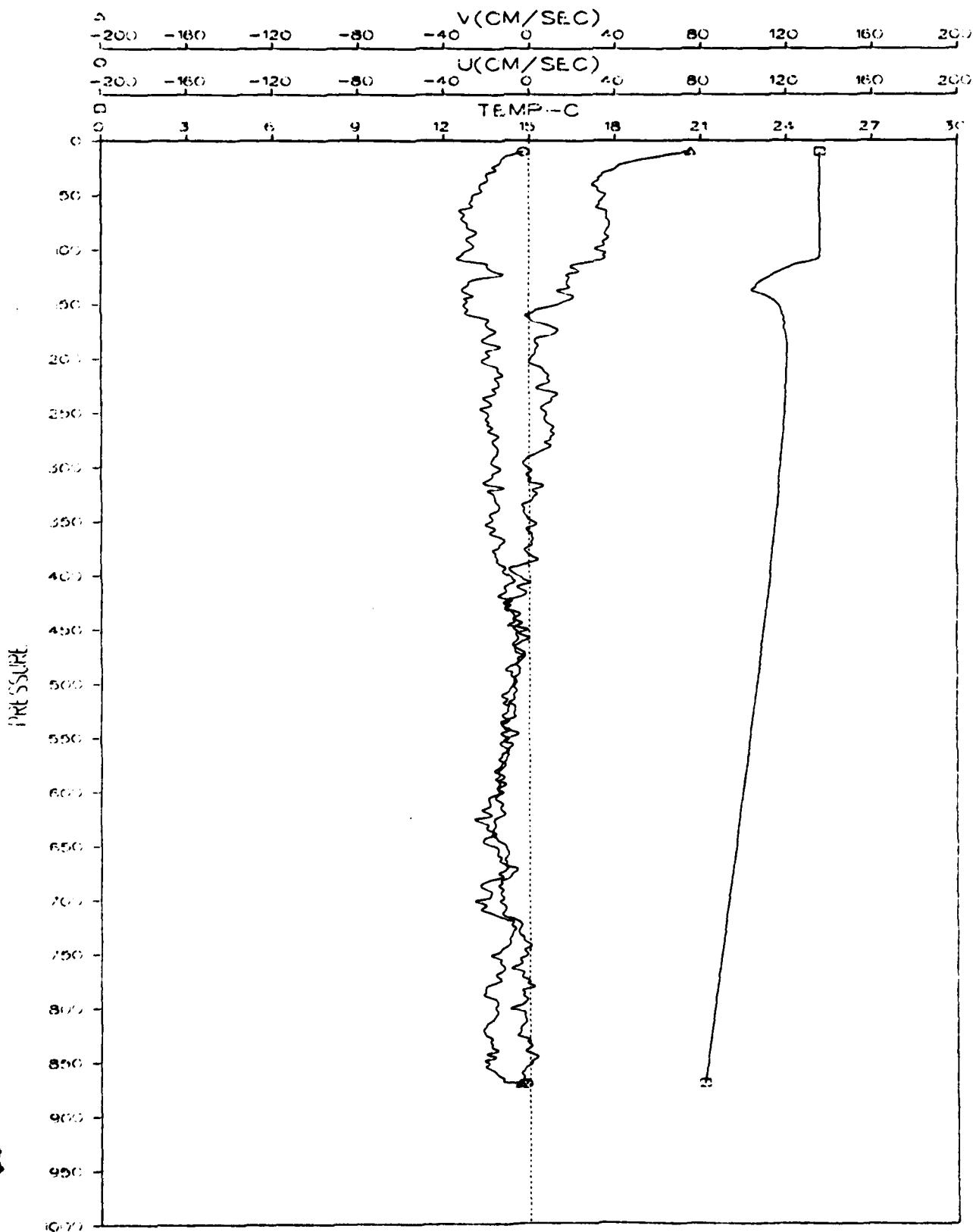


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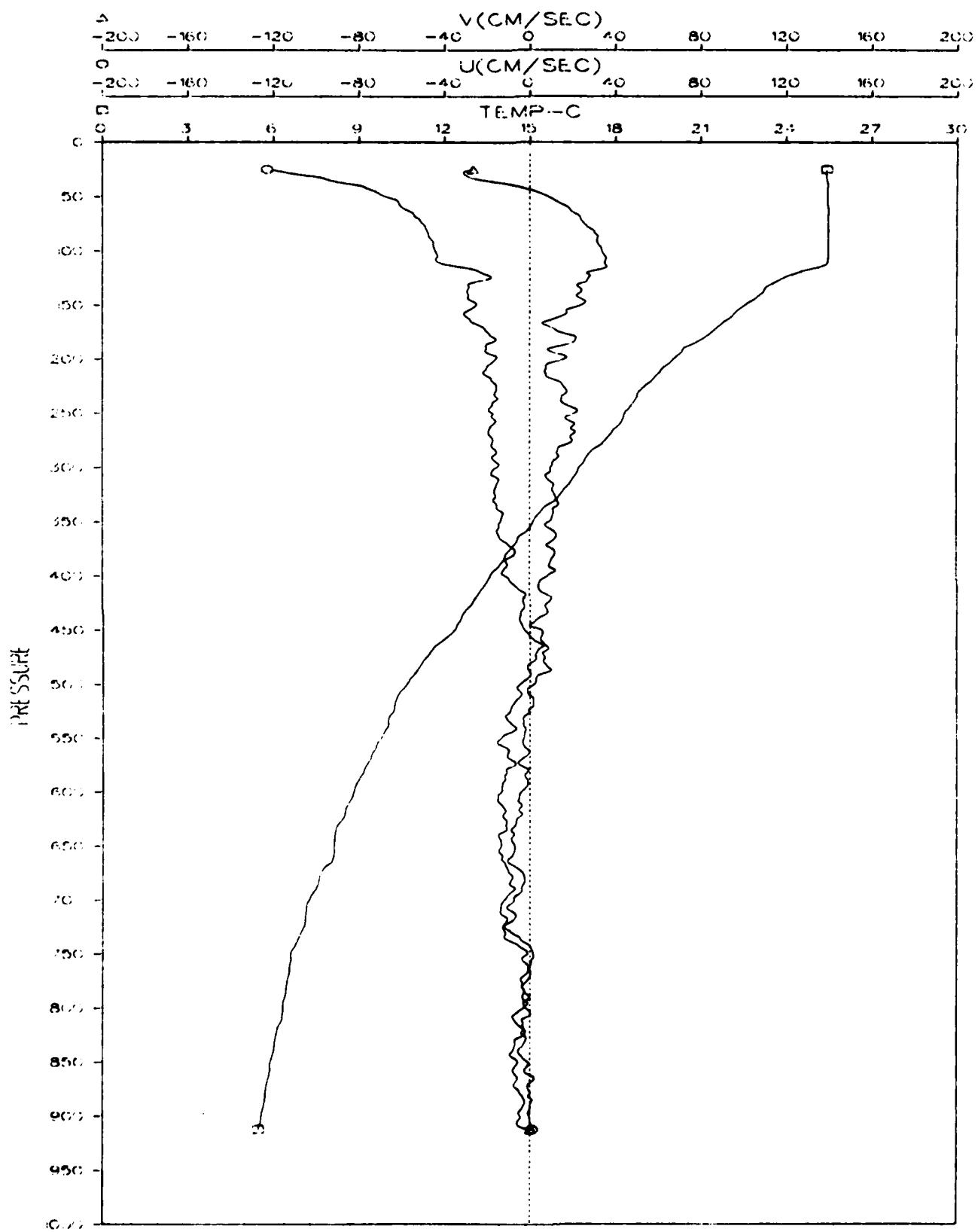


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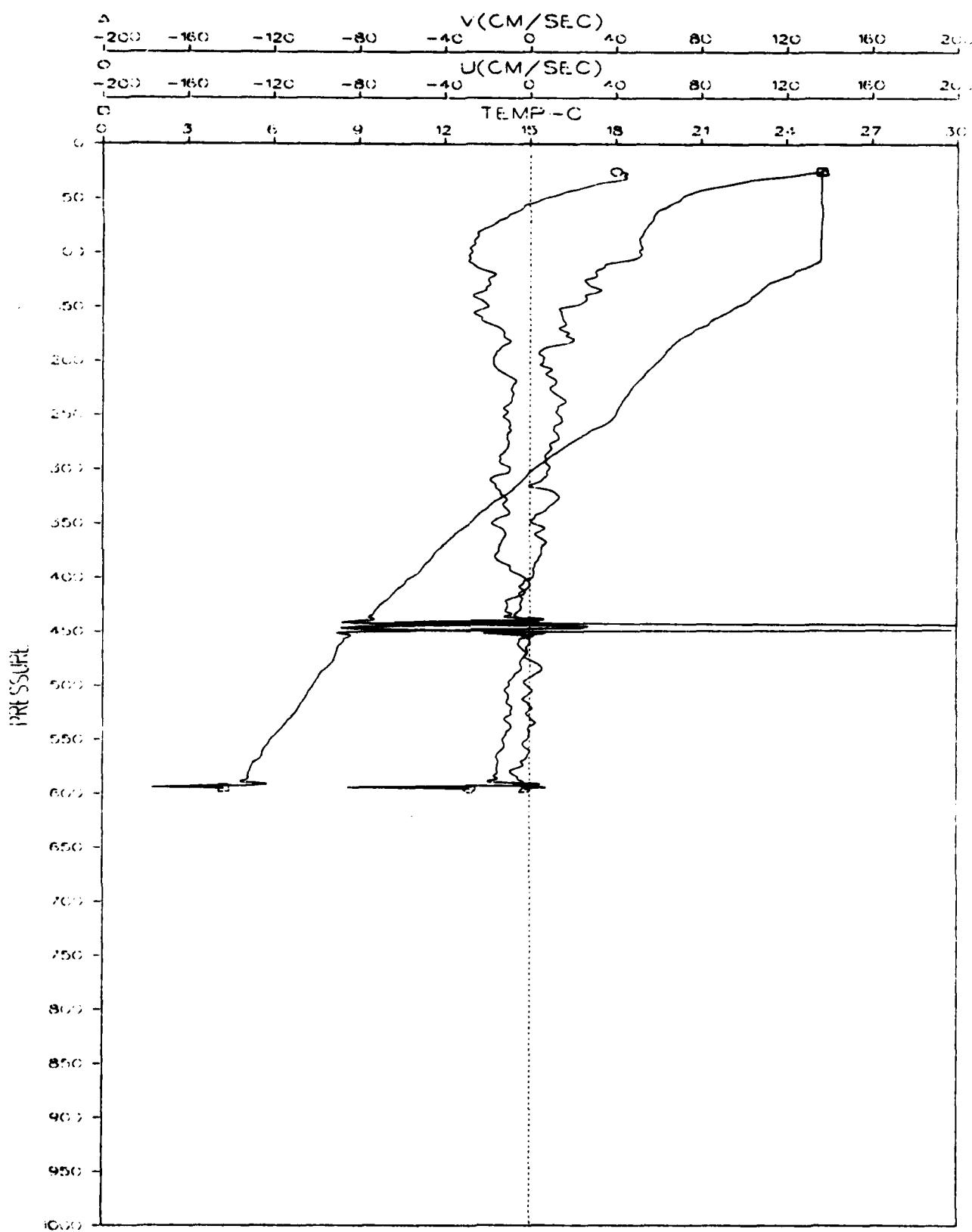


Figure 558

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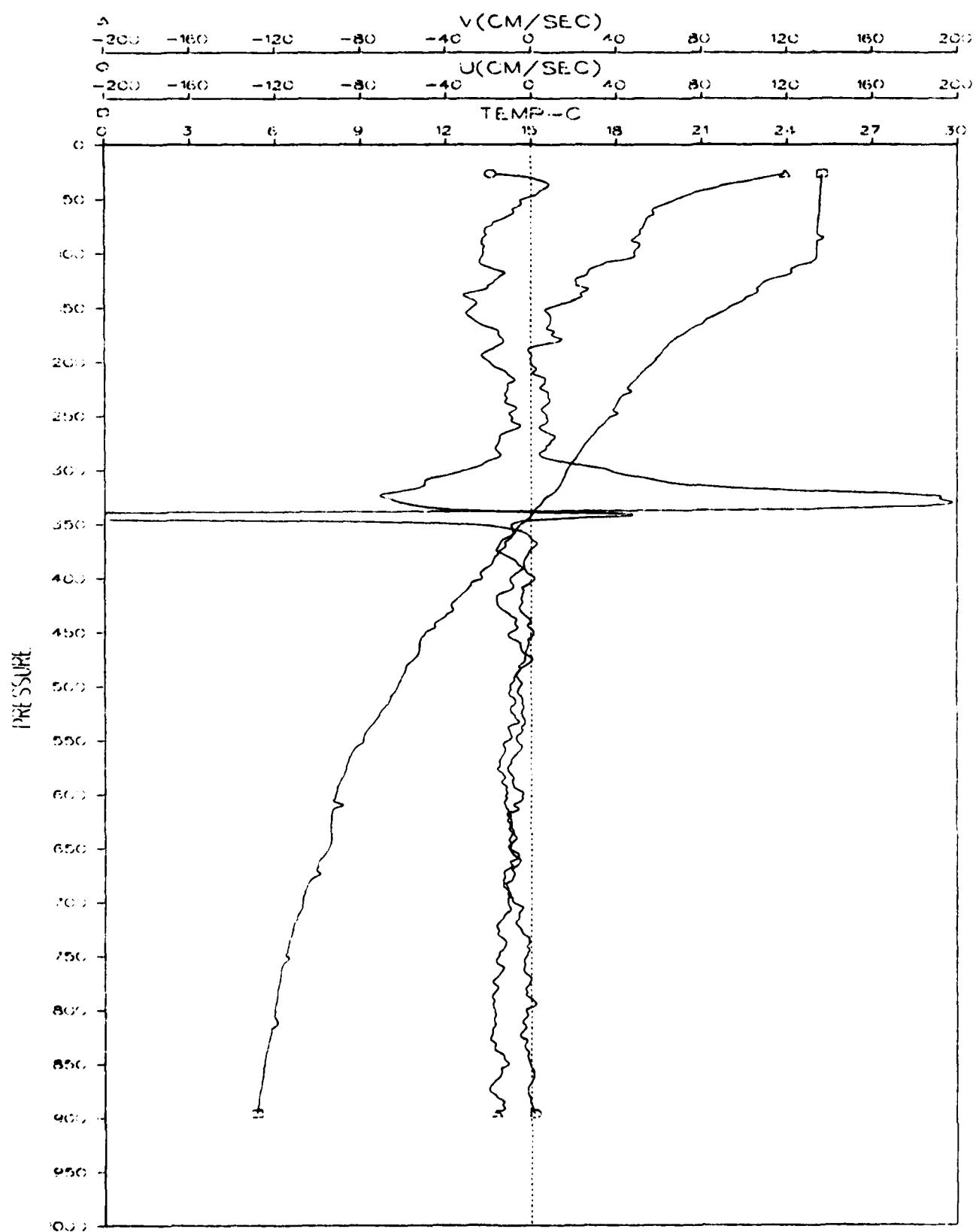


Figure 559

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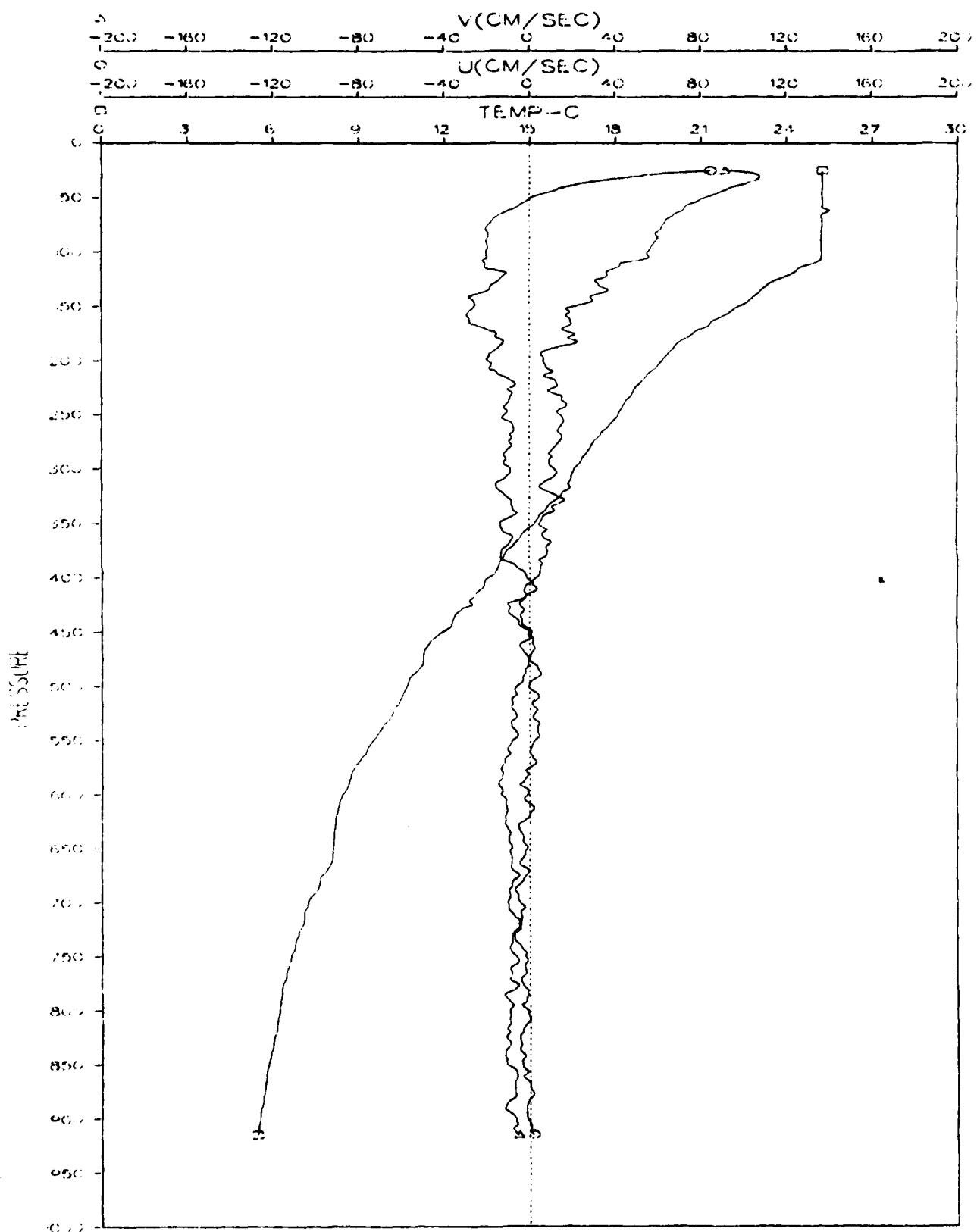


Figure 560

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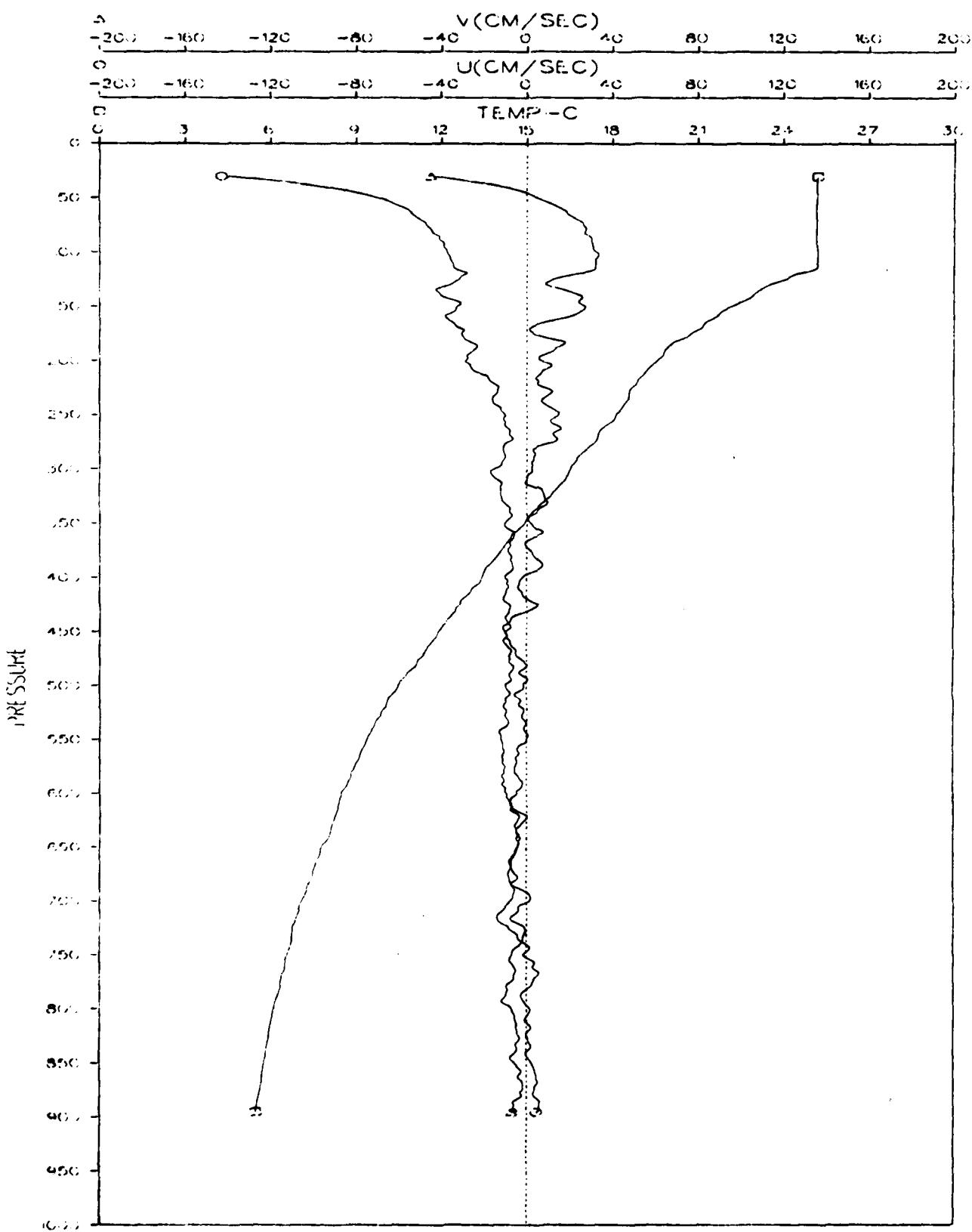


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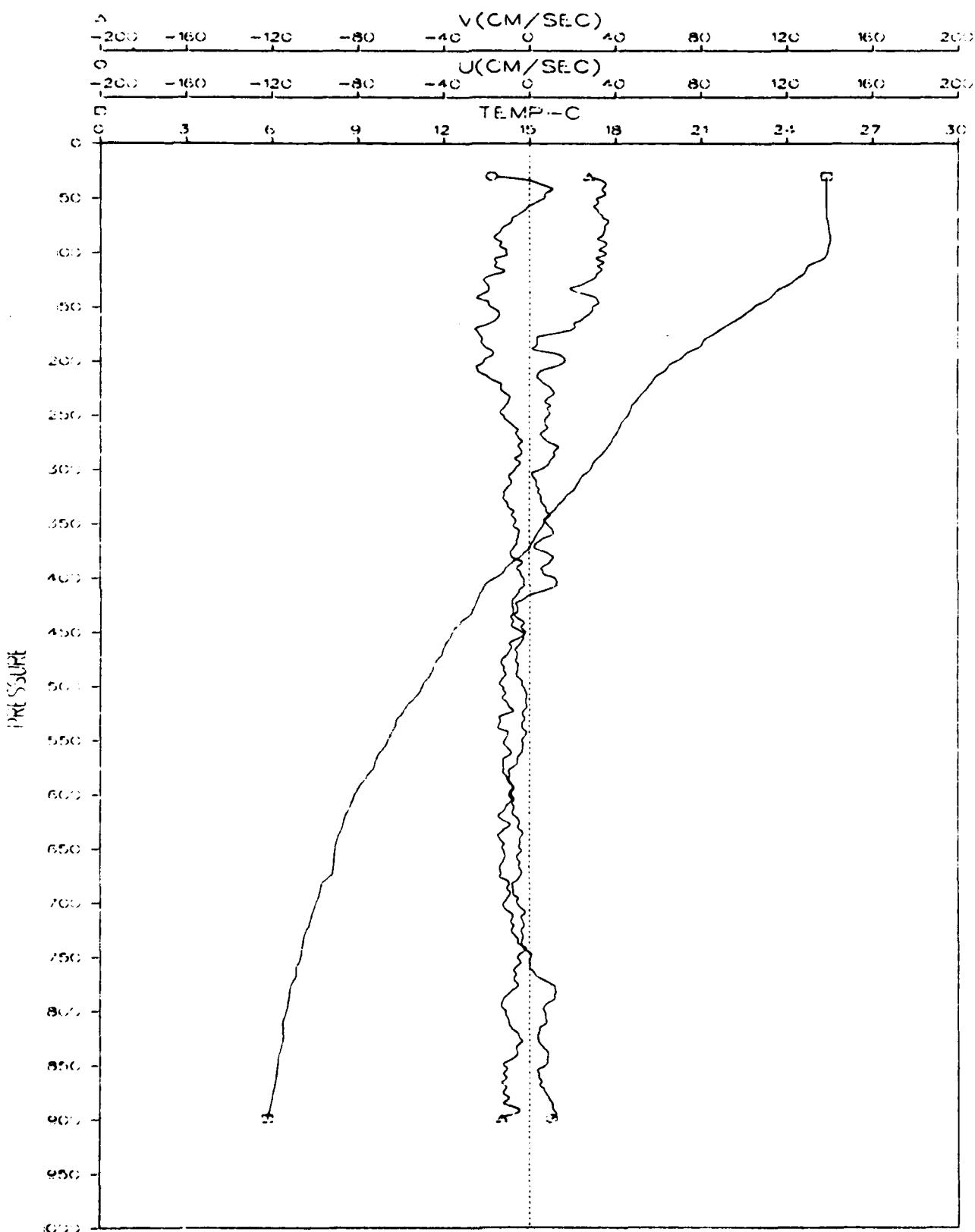


Figure 562

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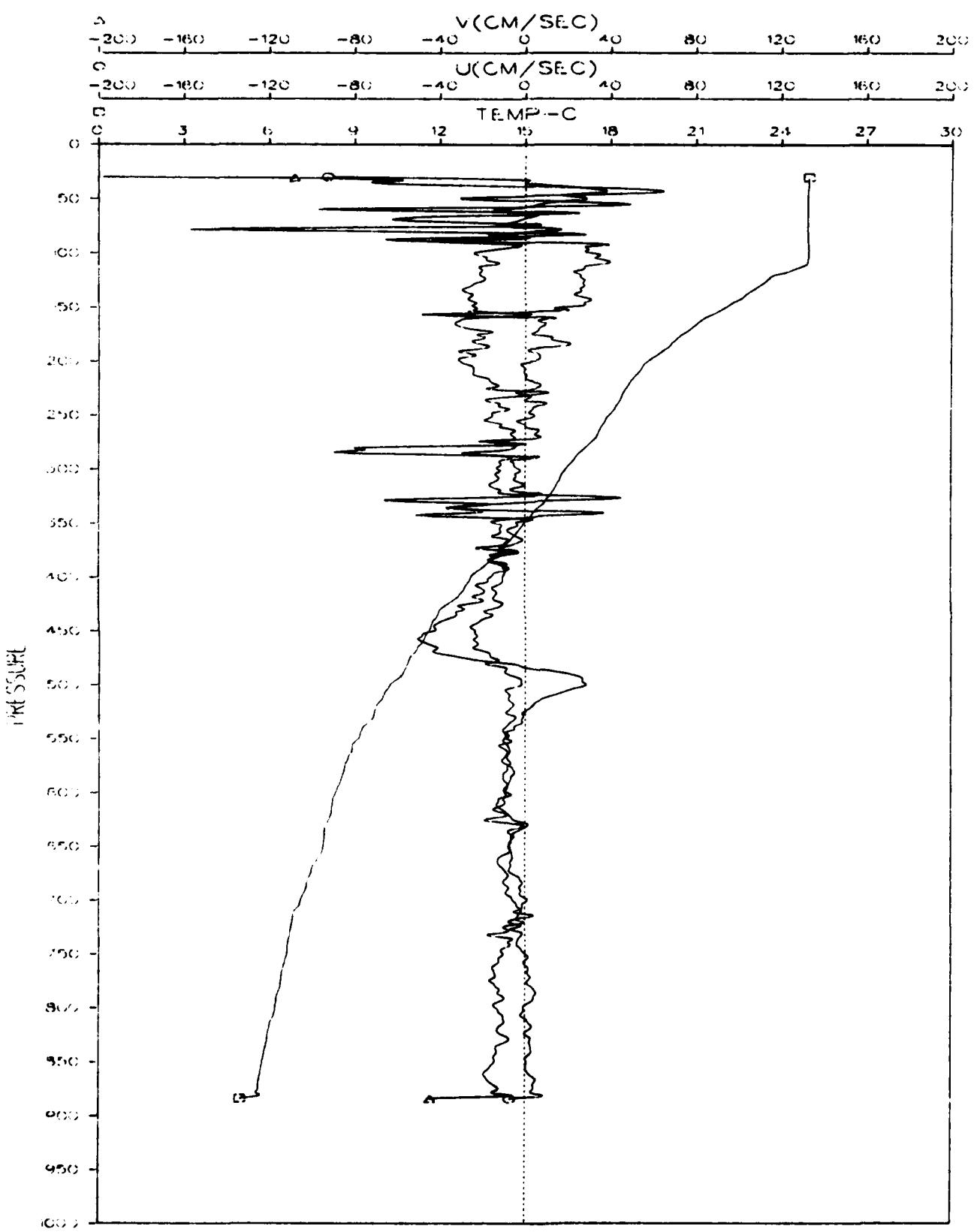


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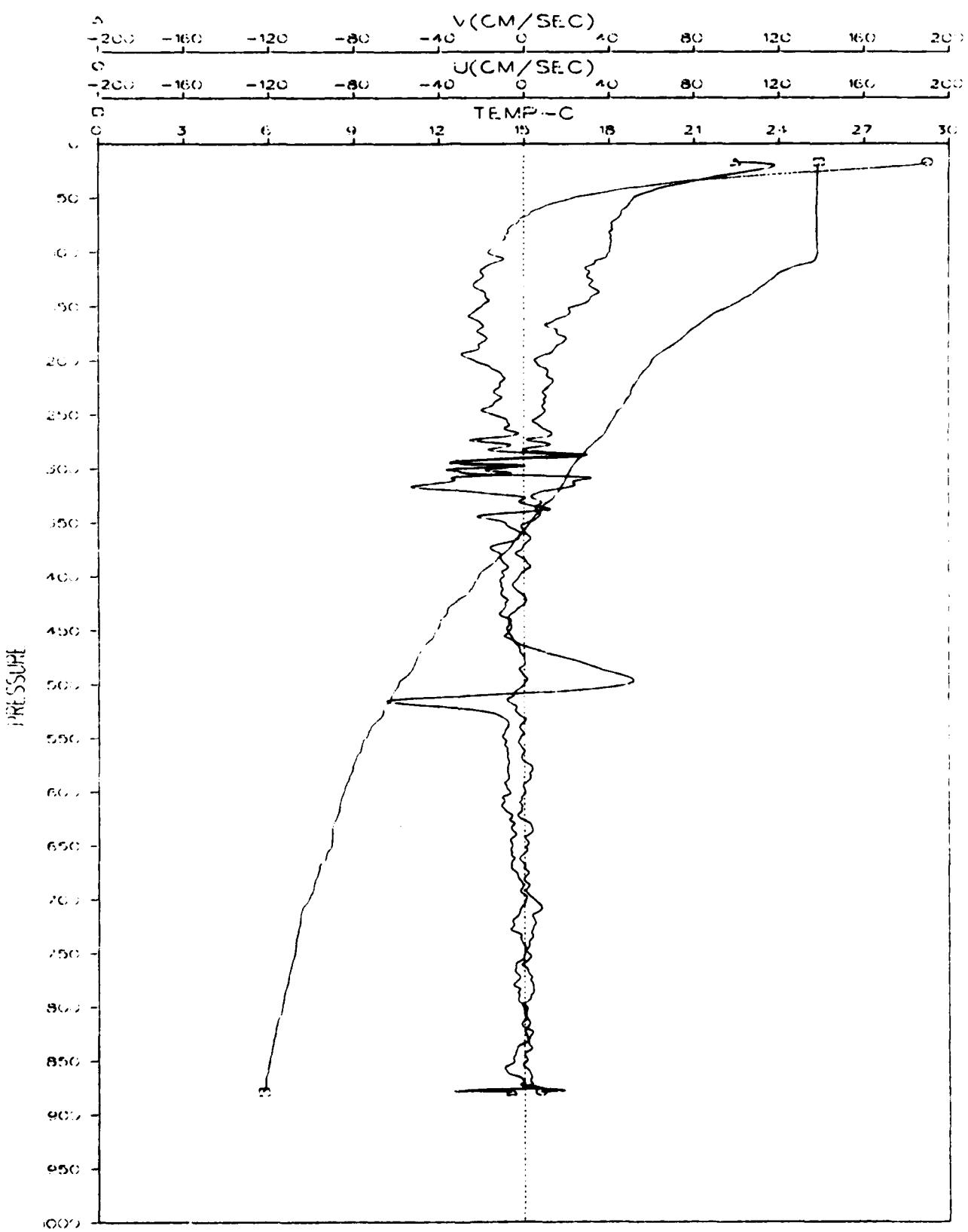


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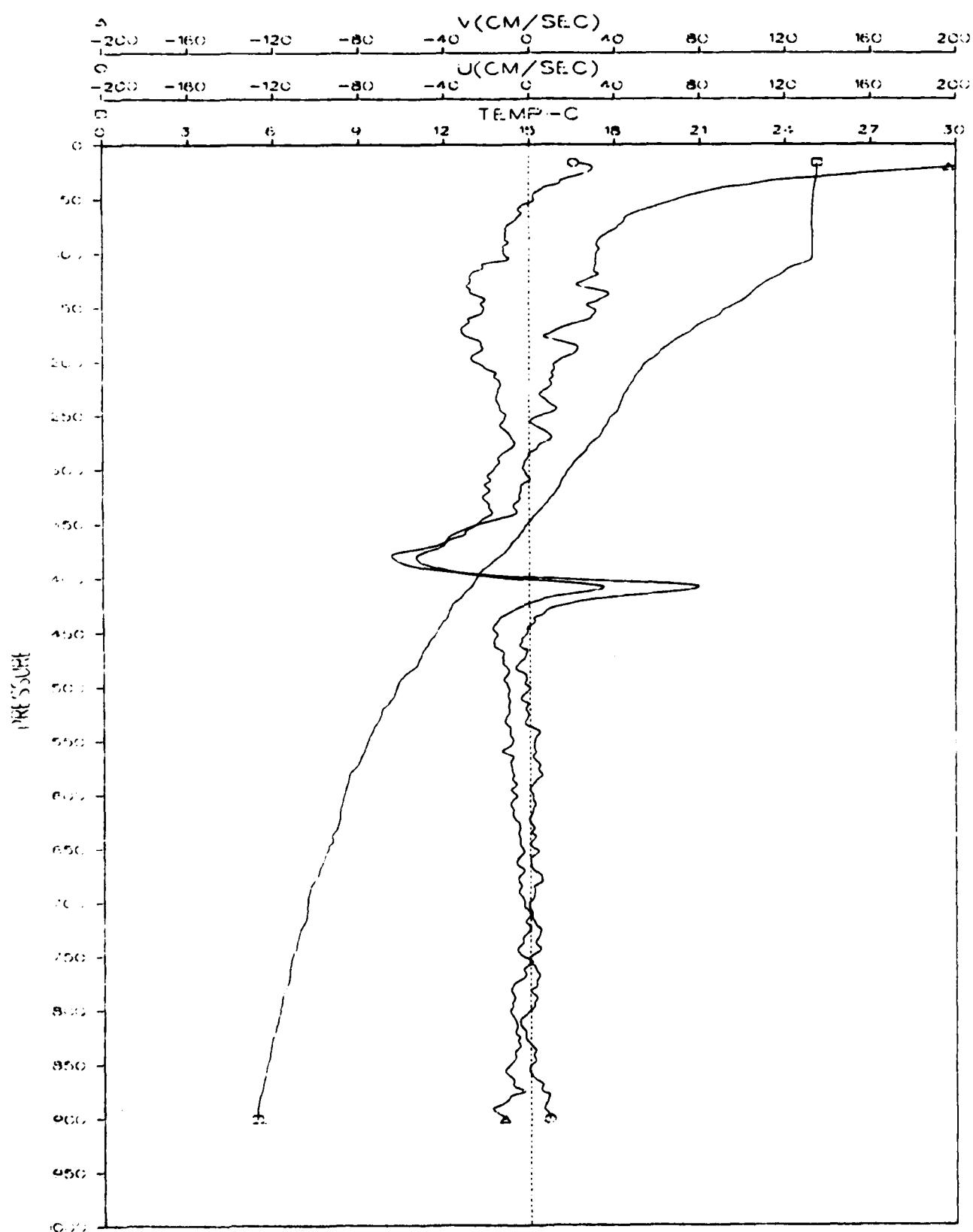


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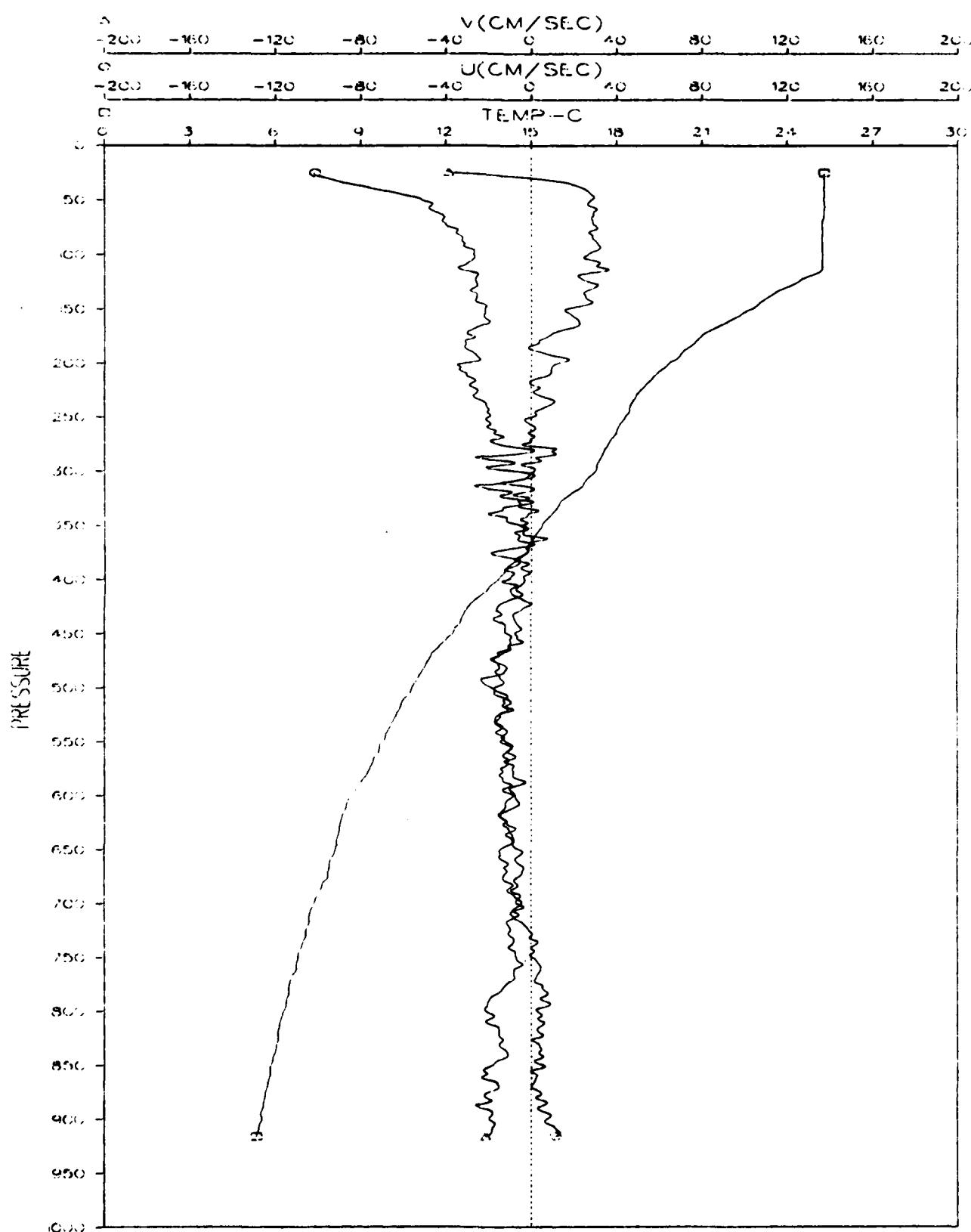


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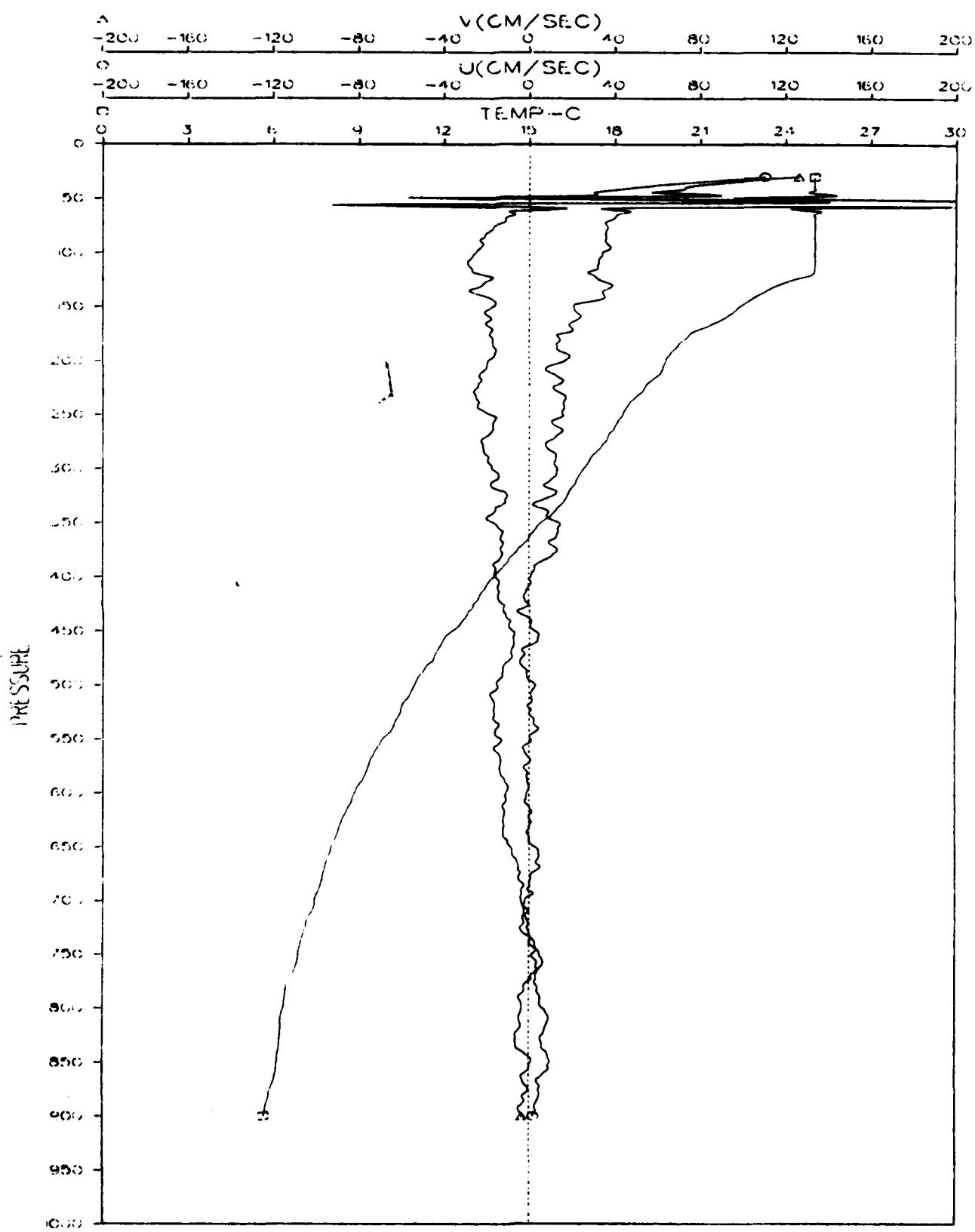


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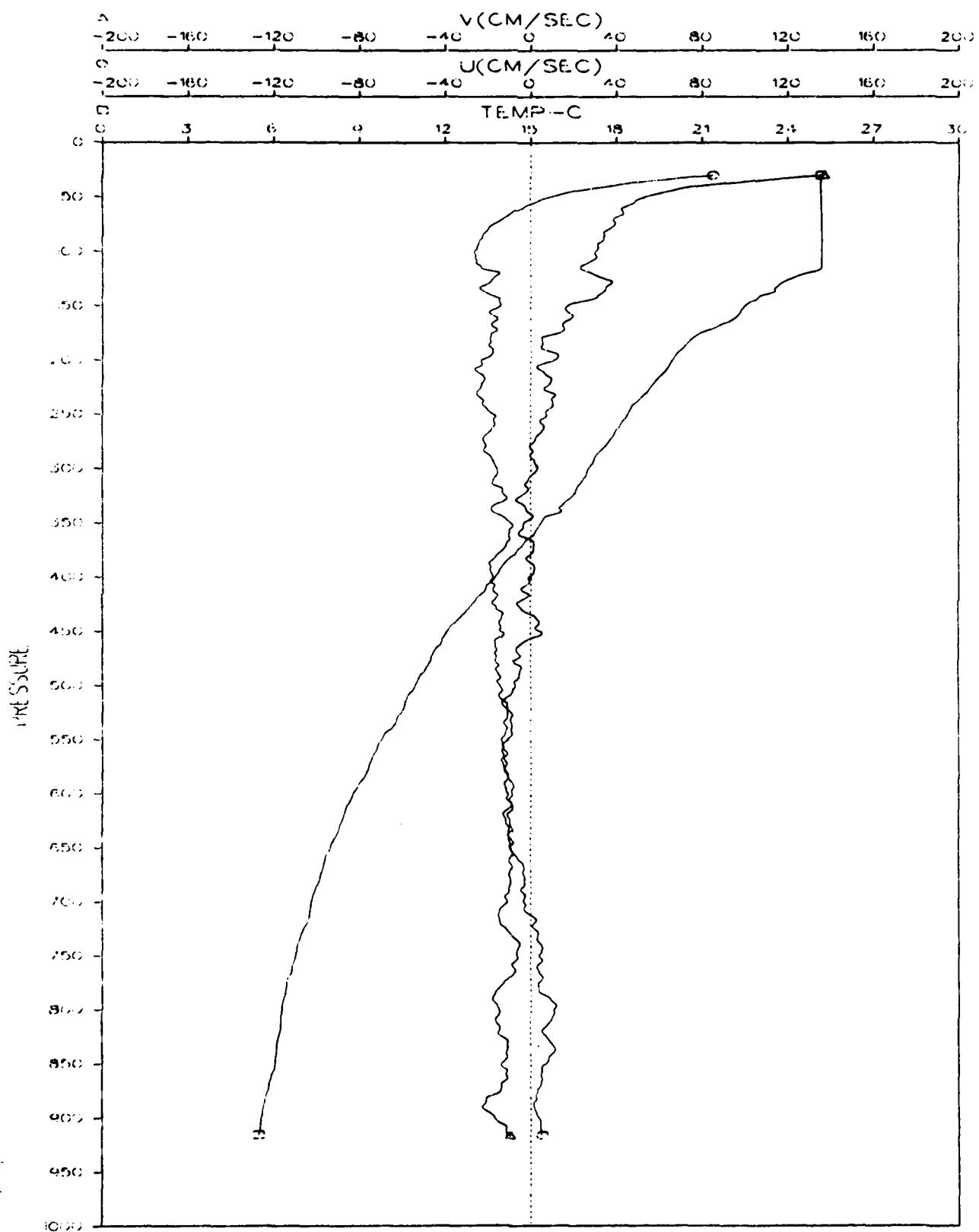


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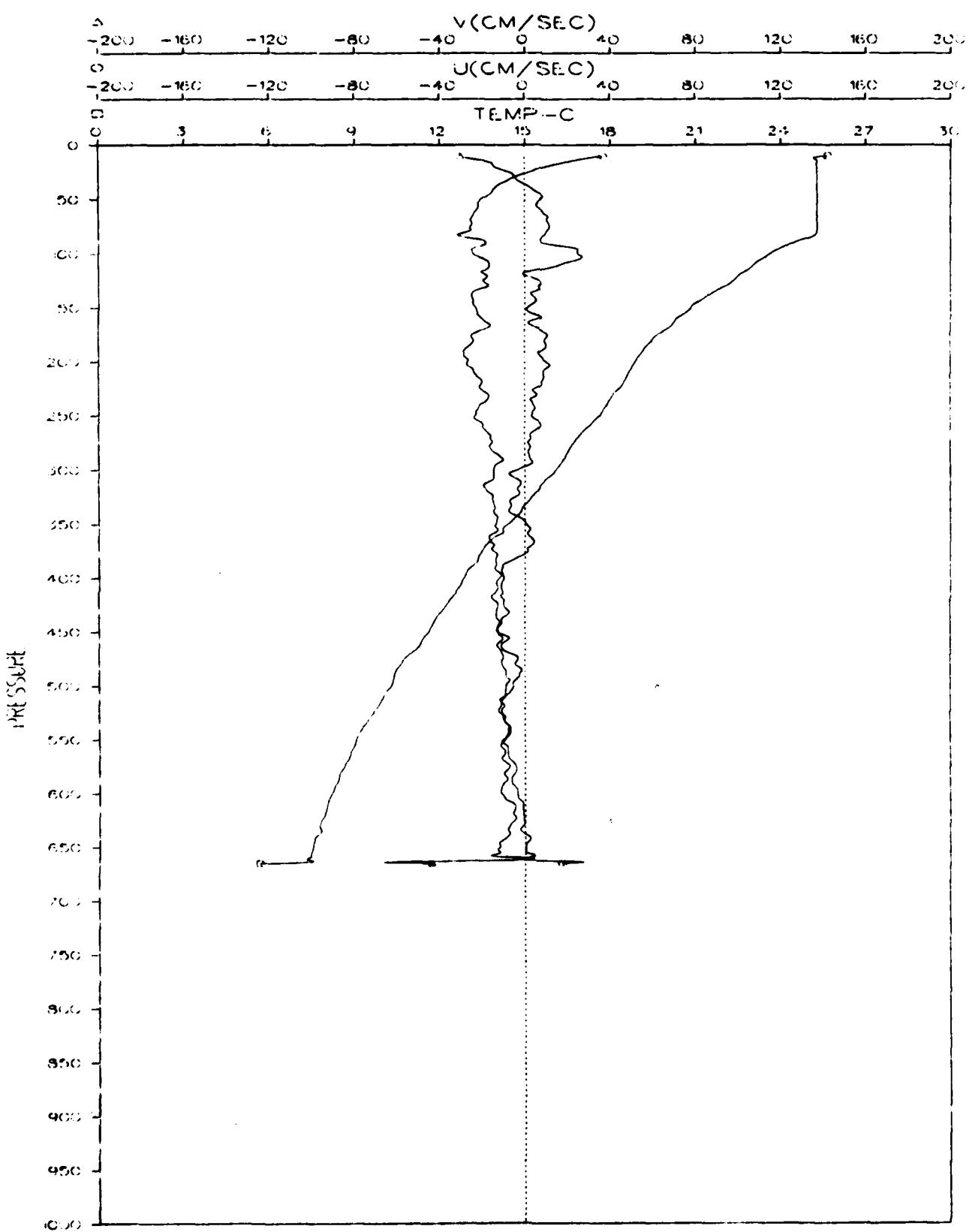


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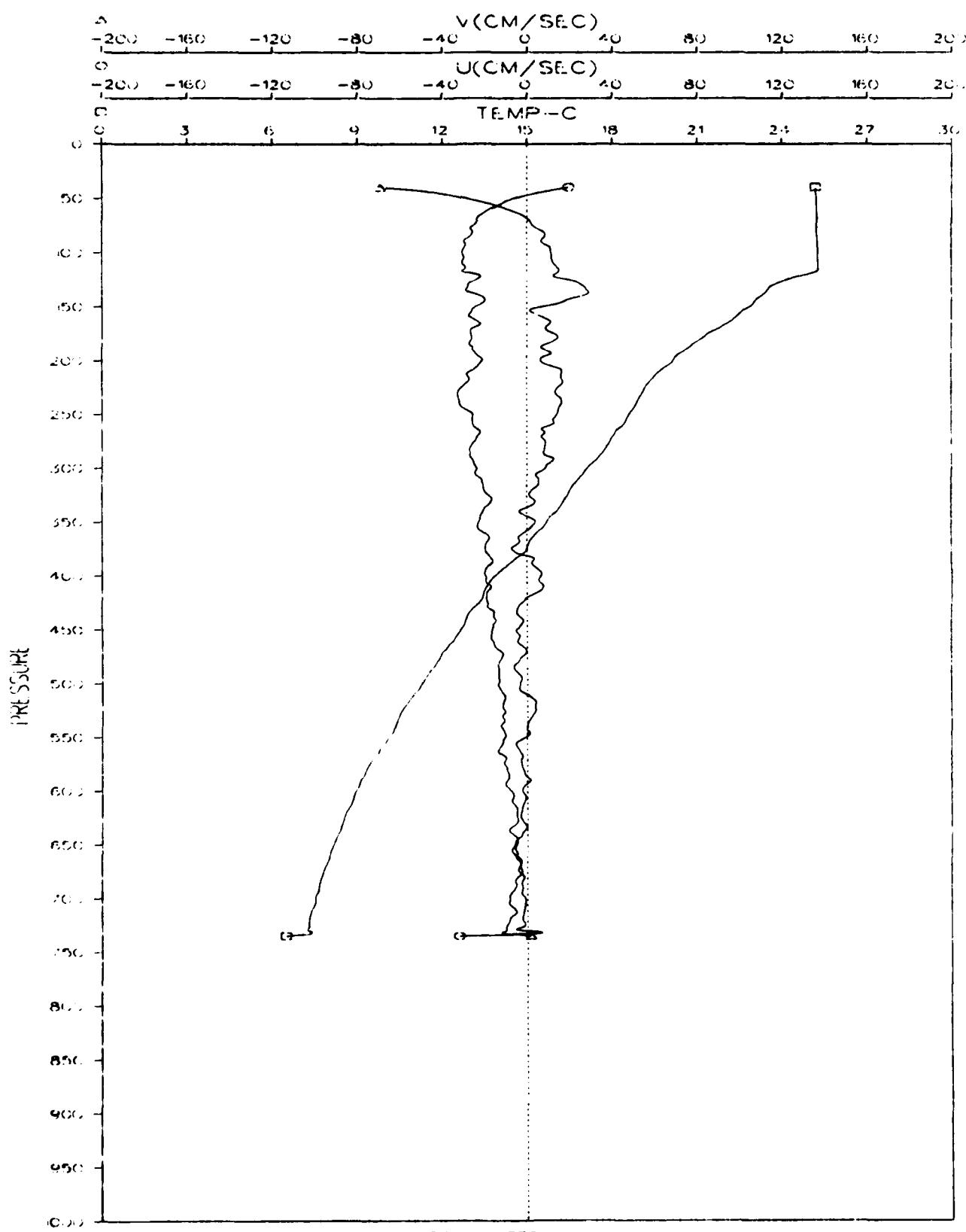


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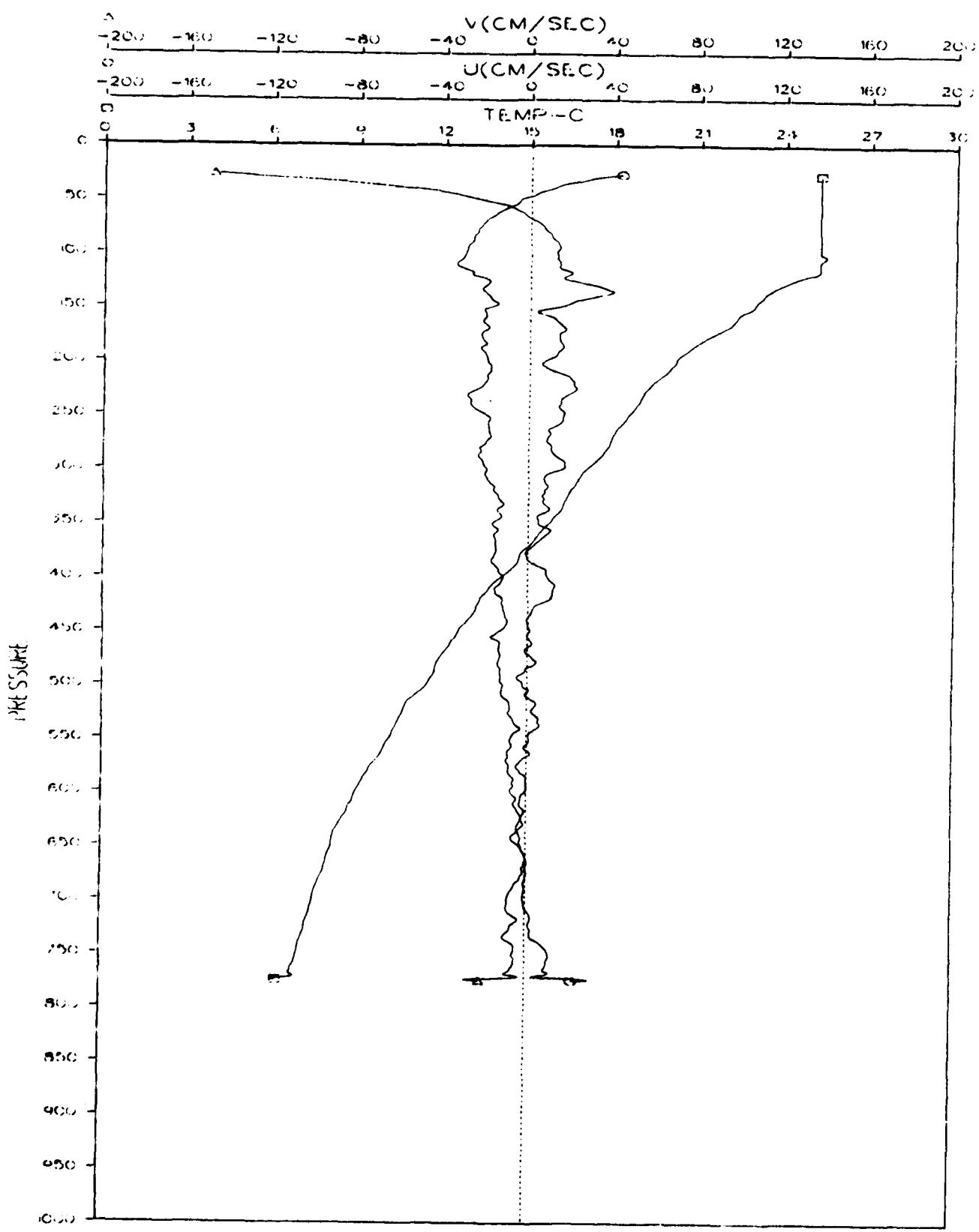


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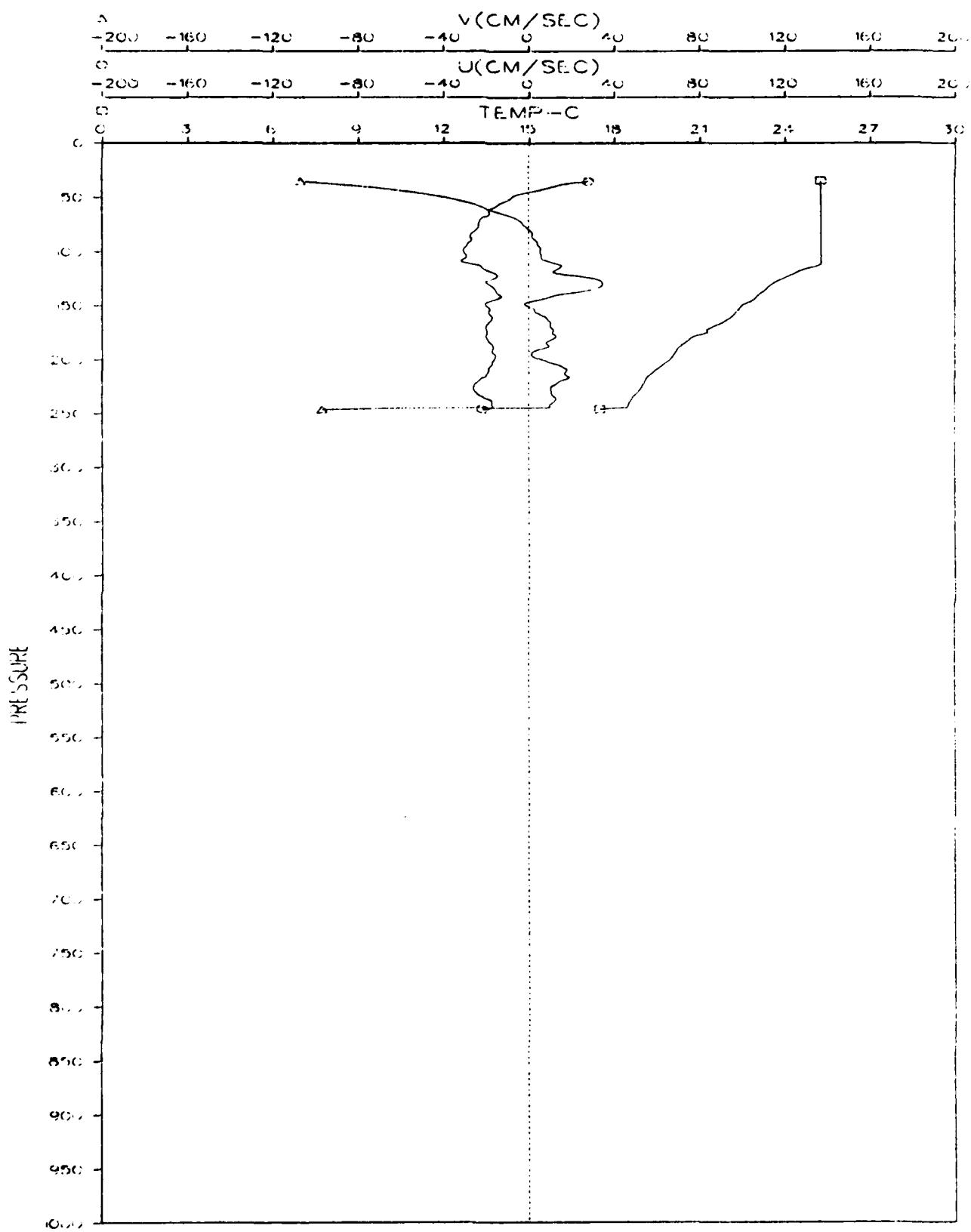


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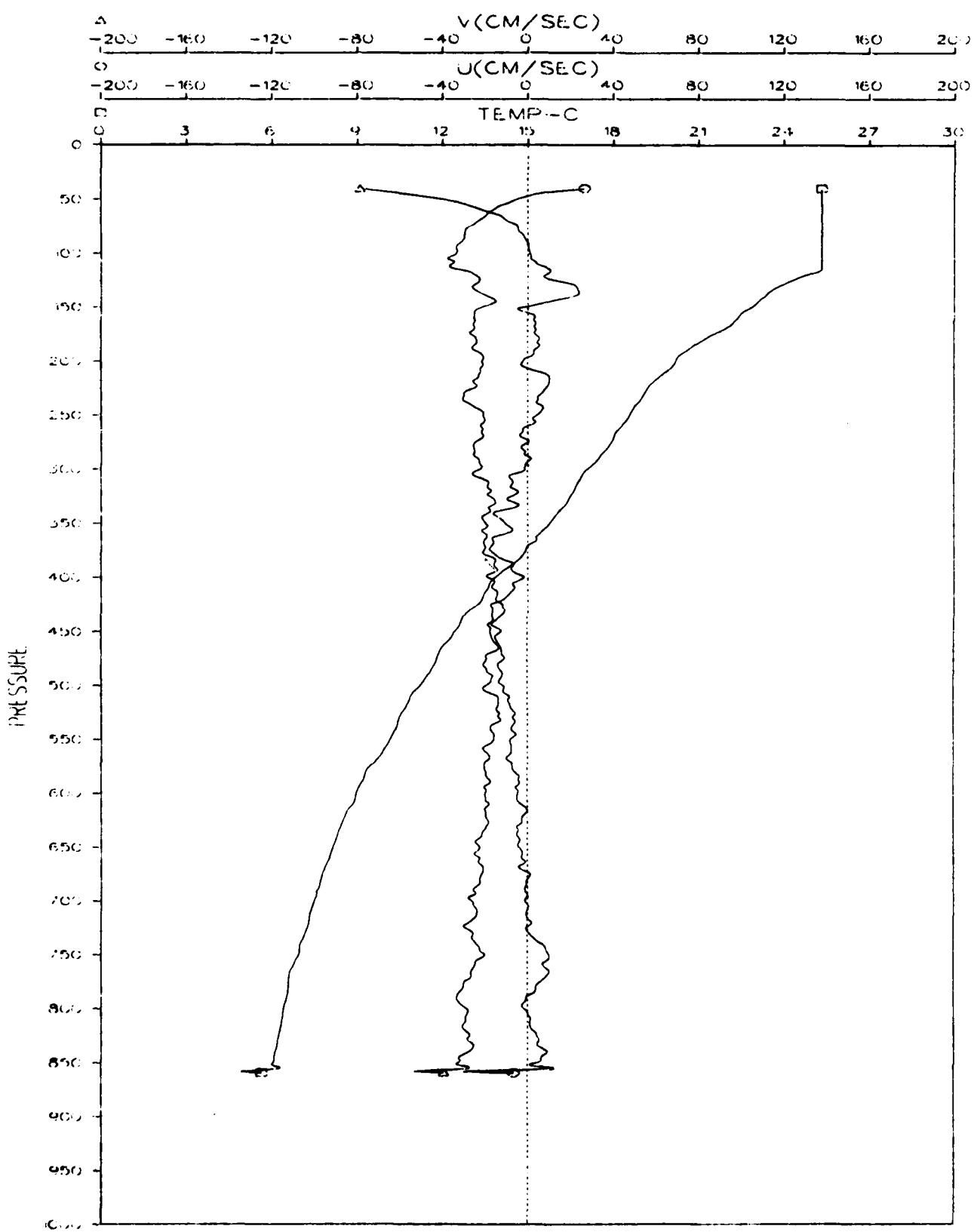


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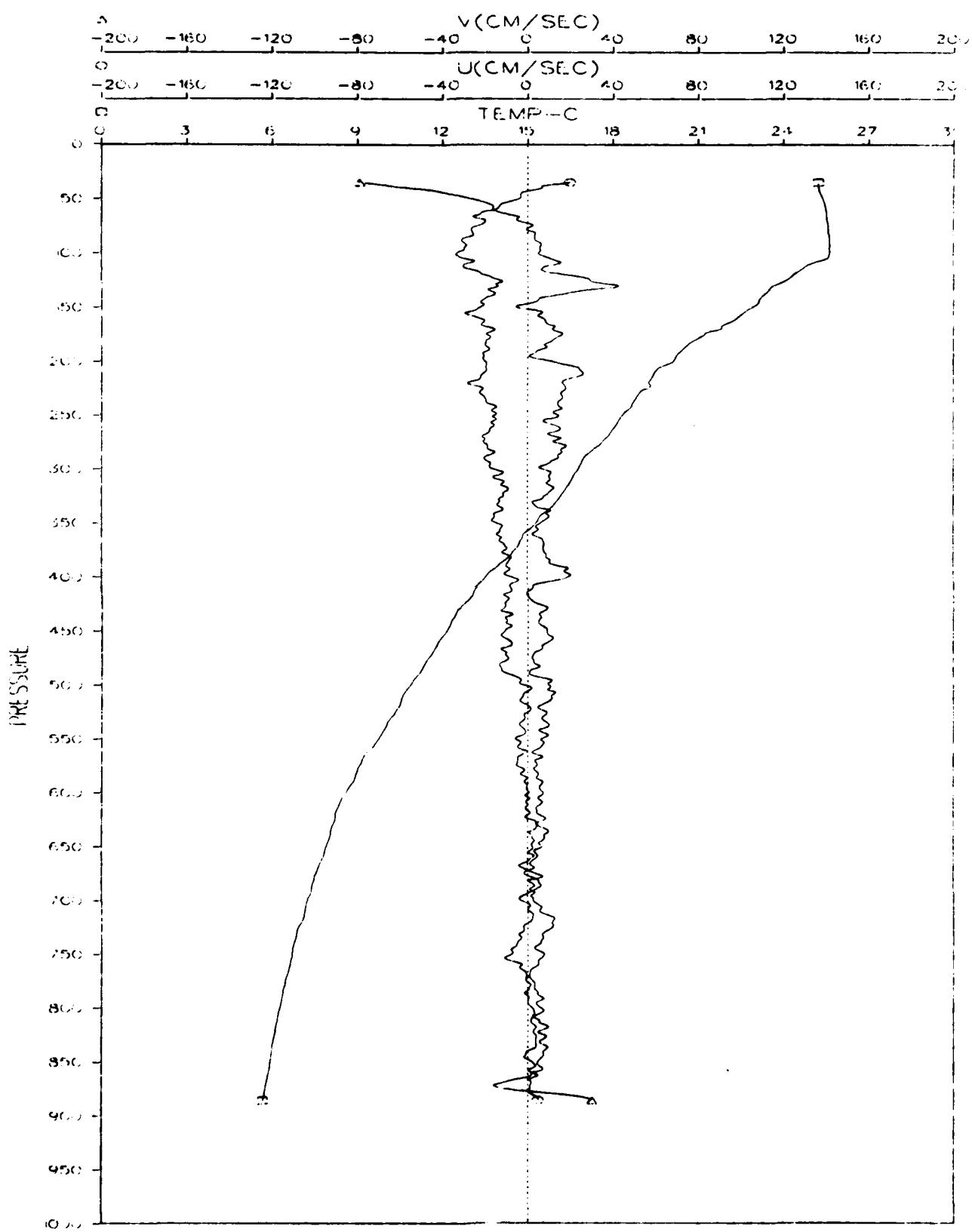


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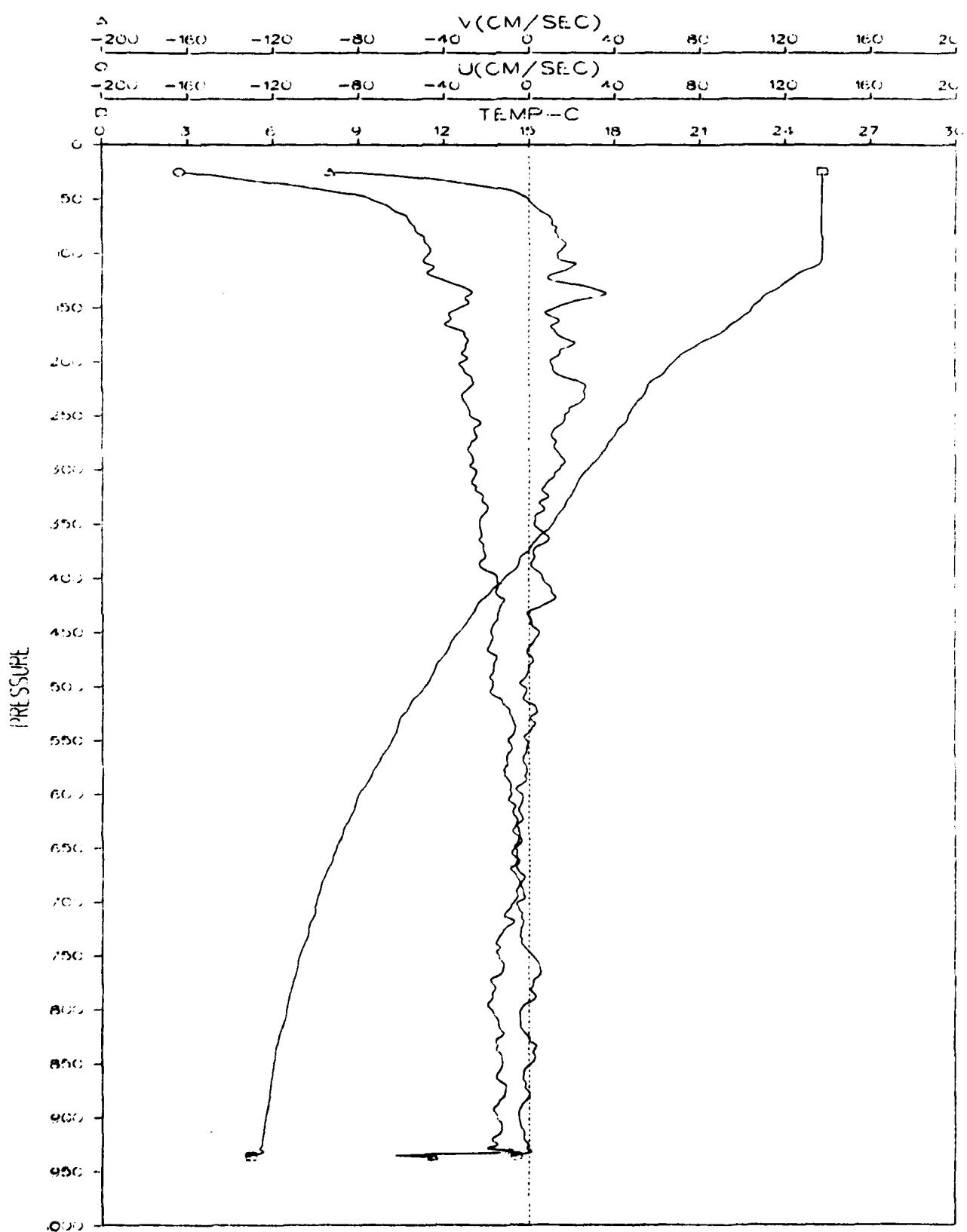


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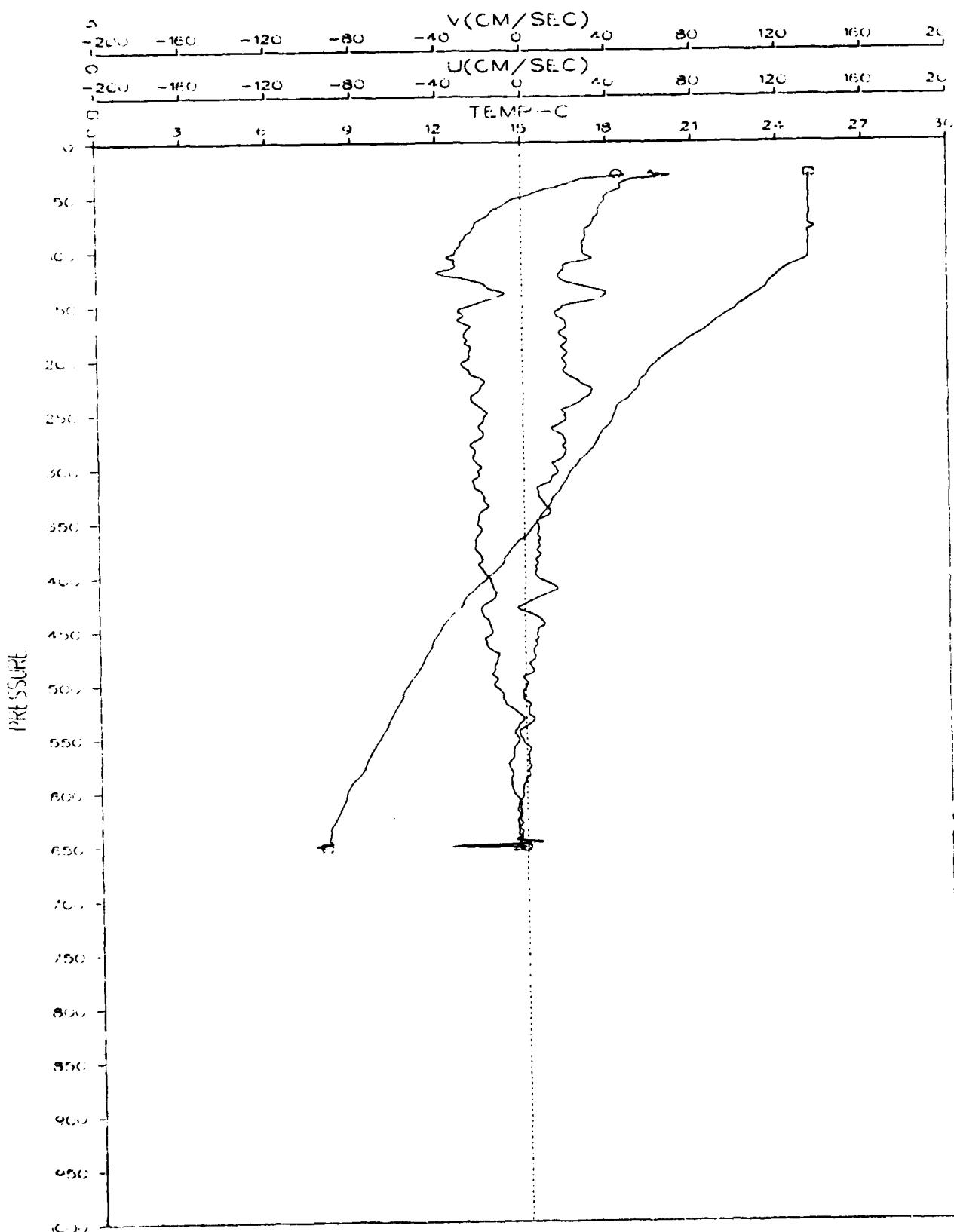


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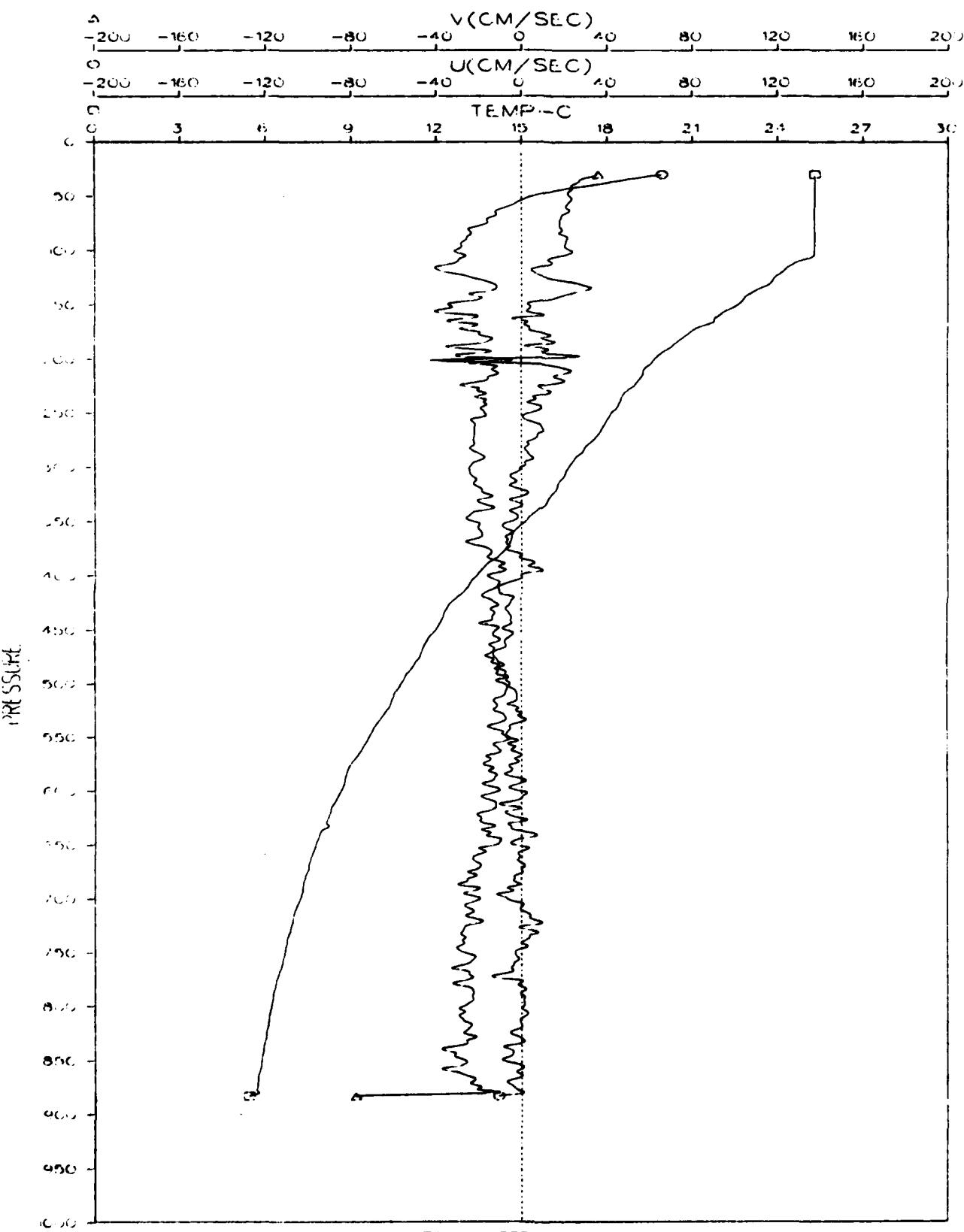


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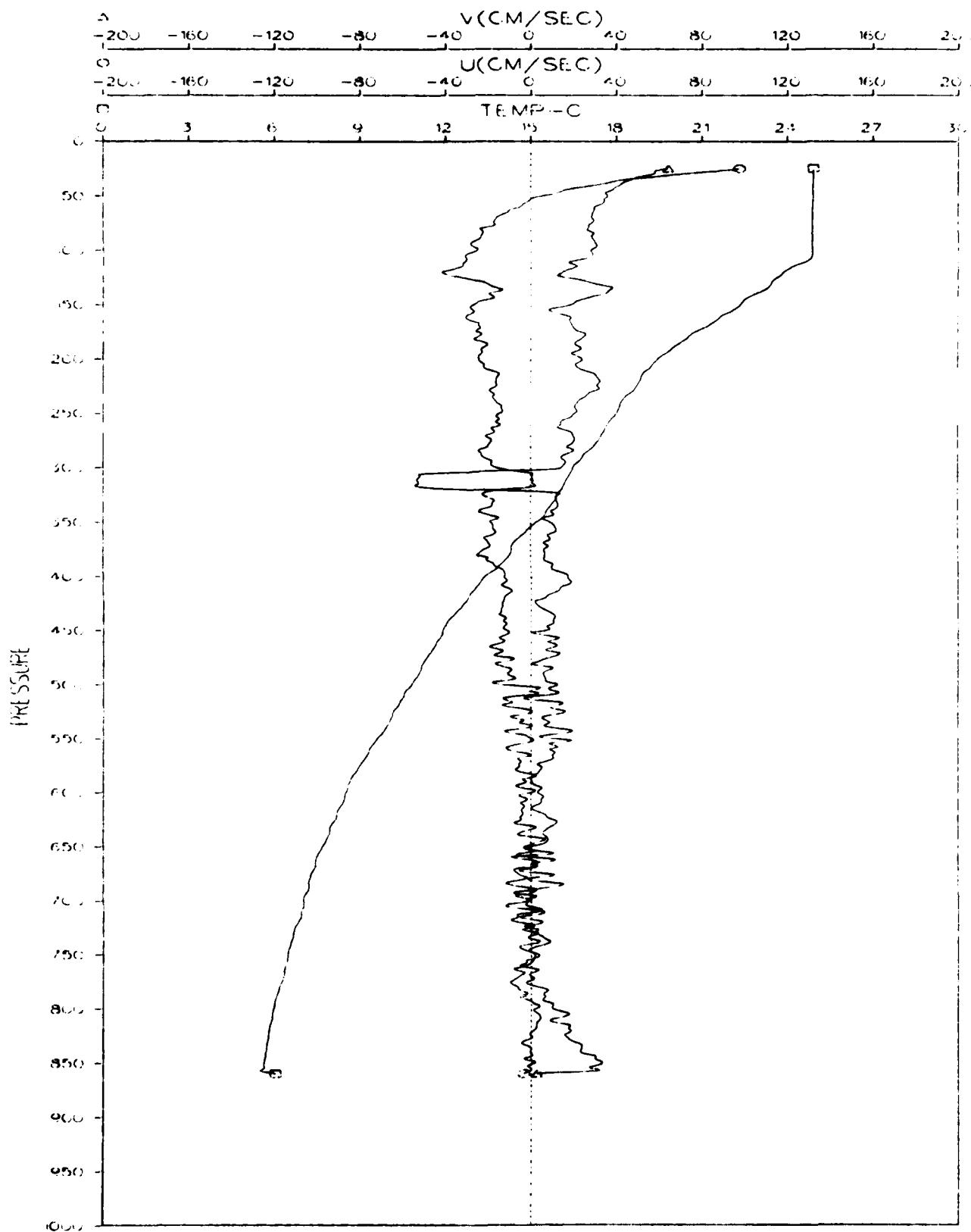


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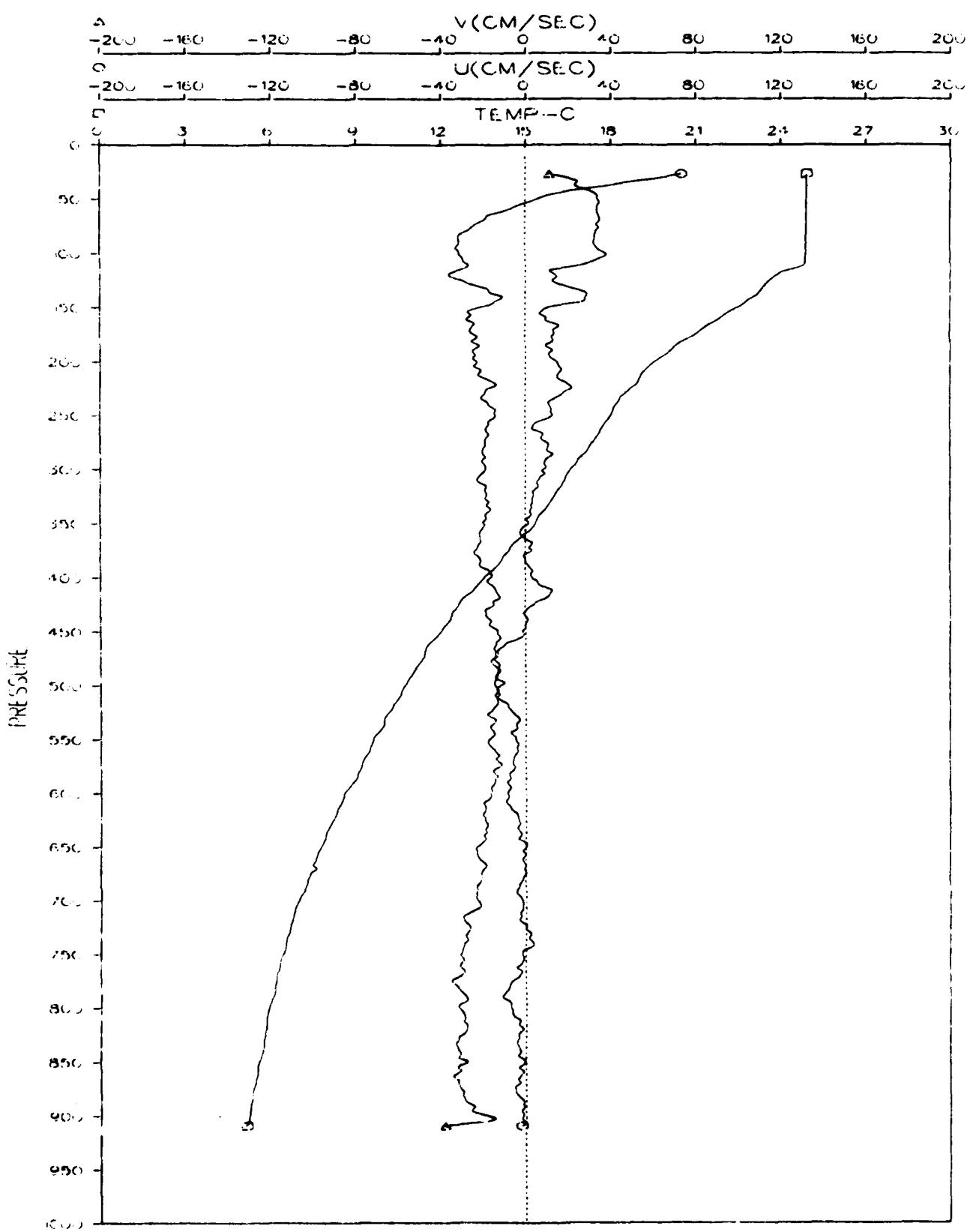


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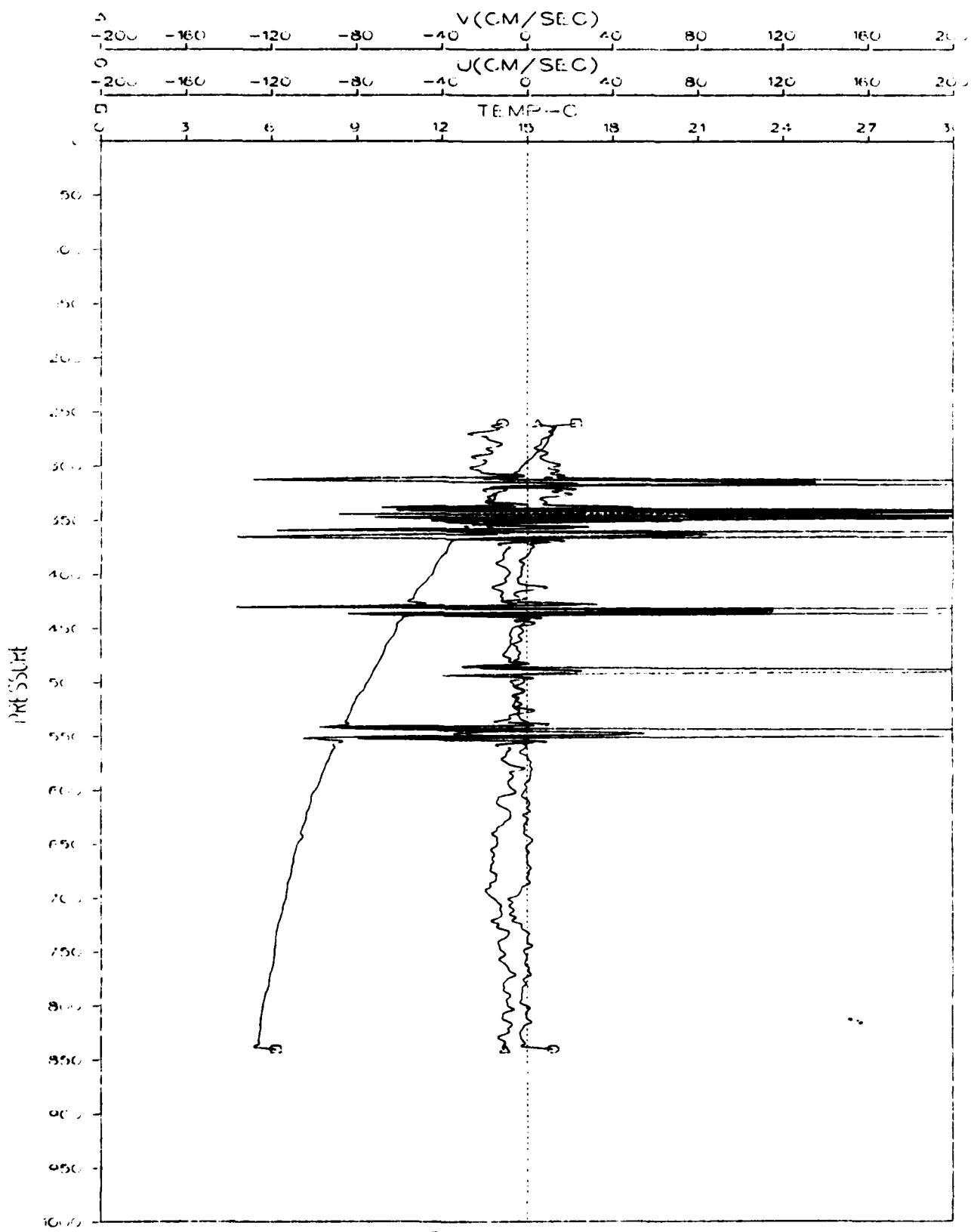


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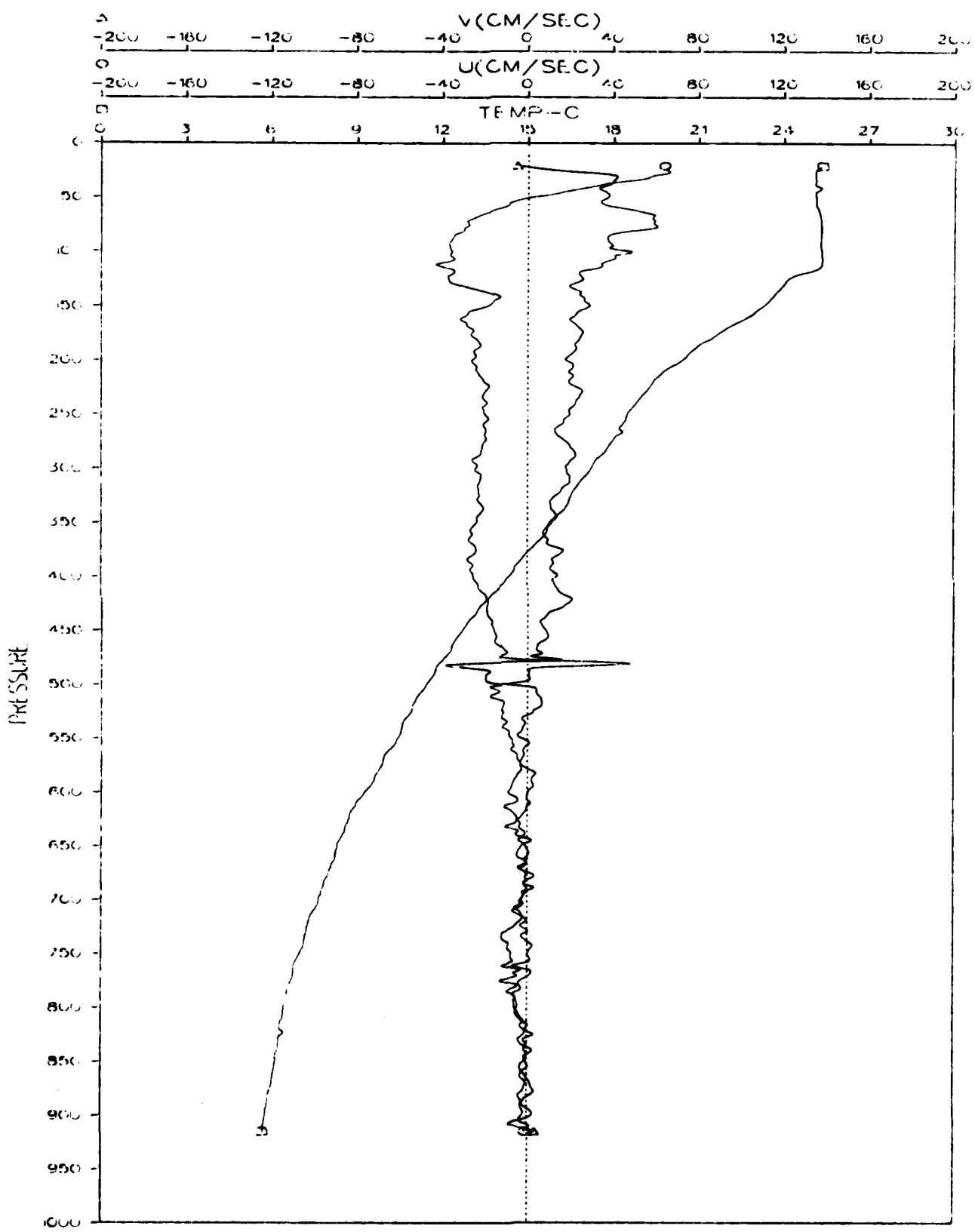


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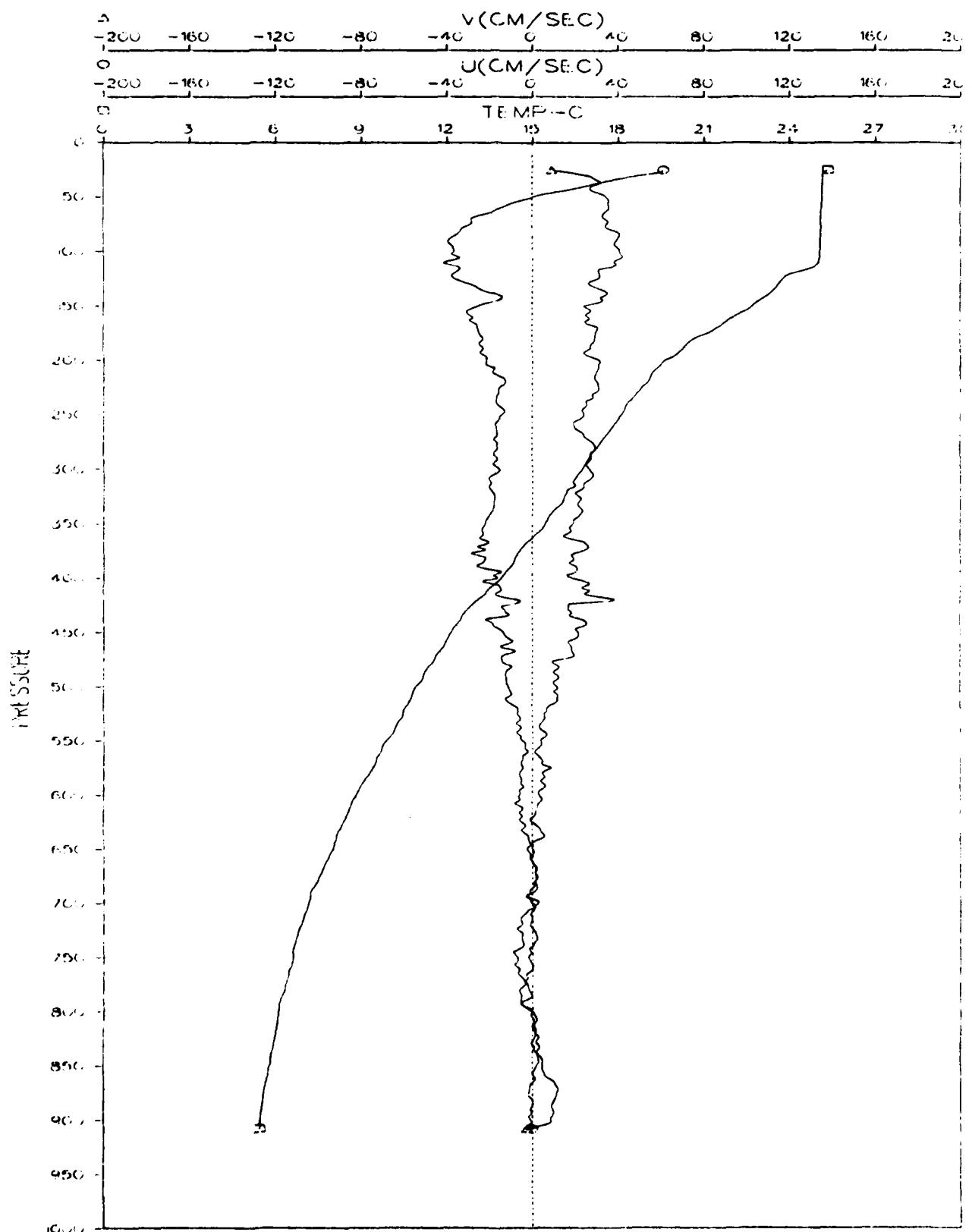


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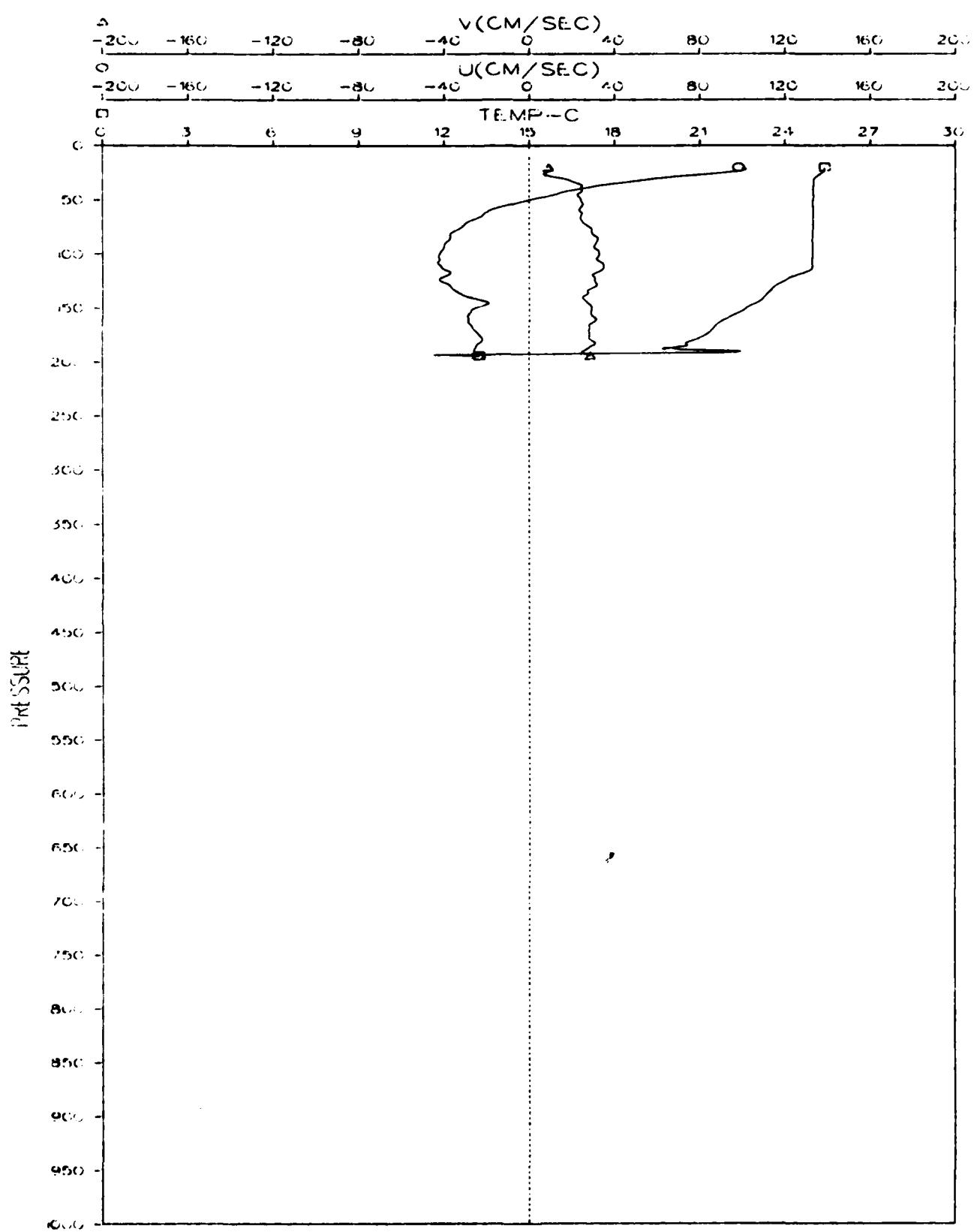


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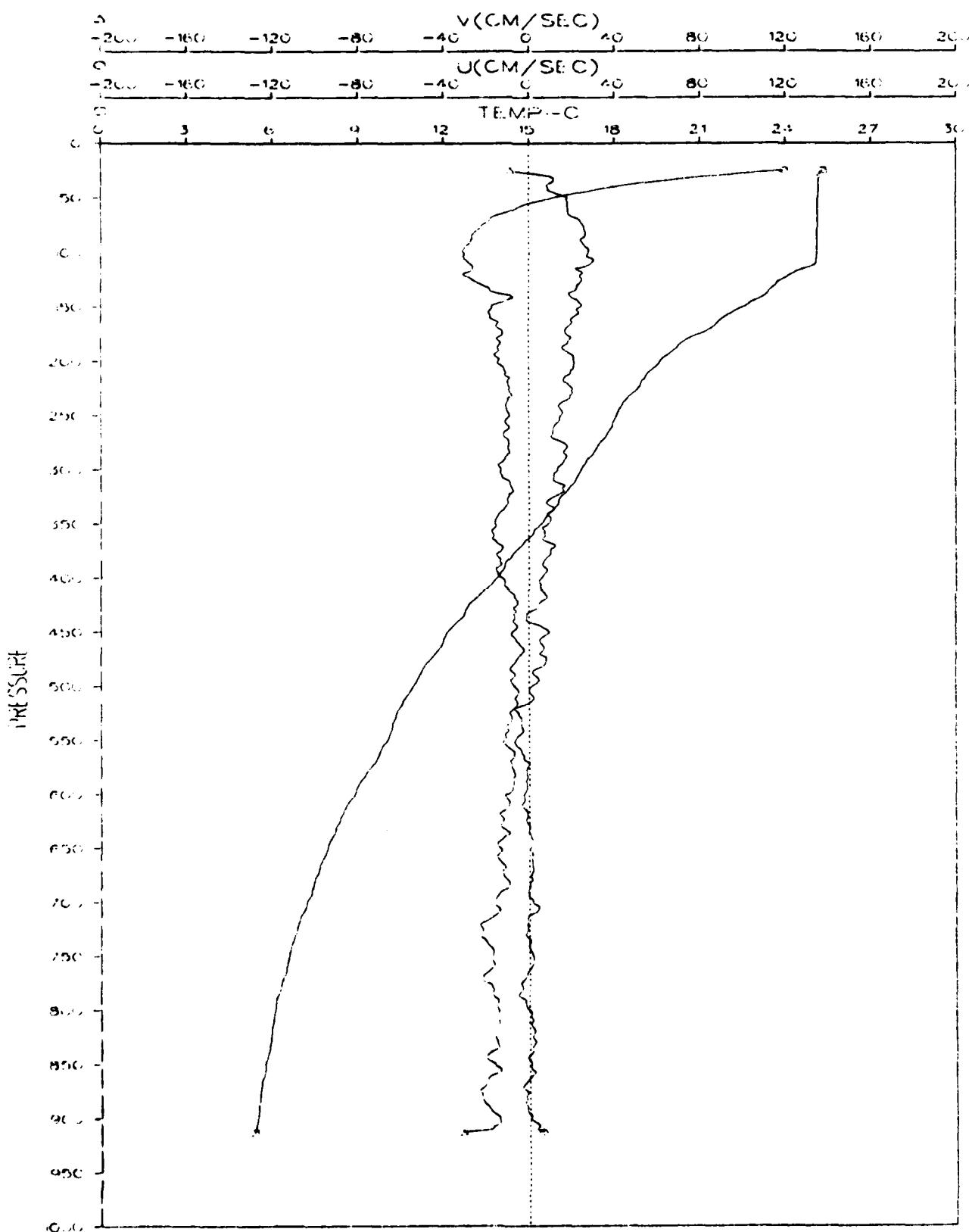


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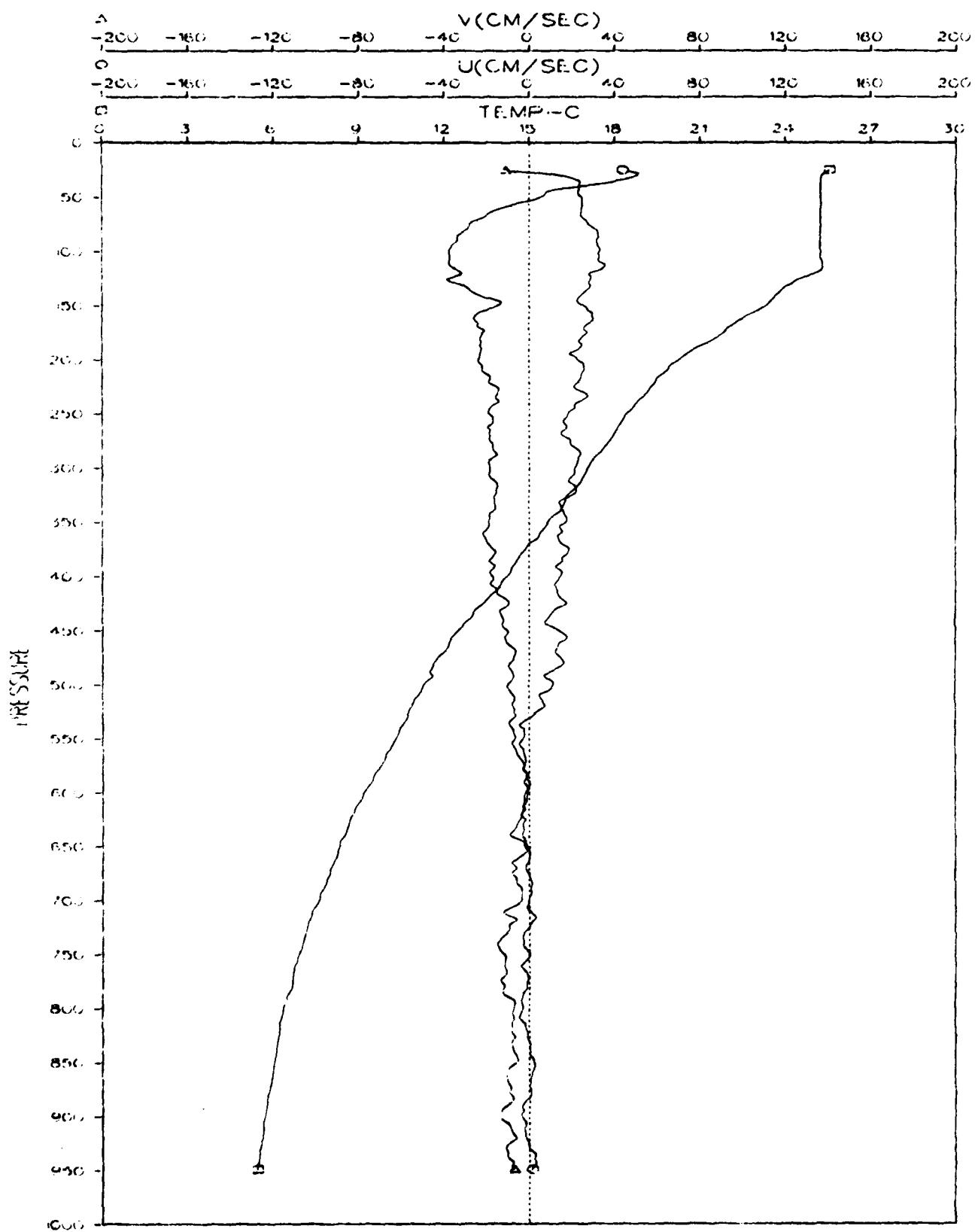


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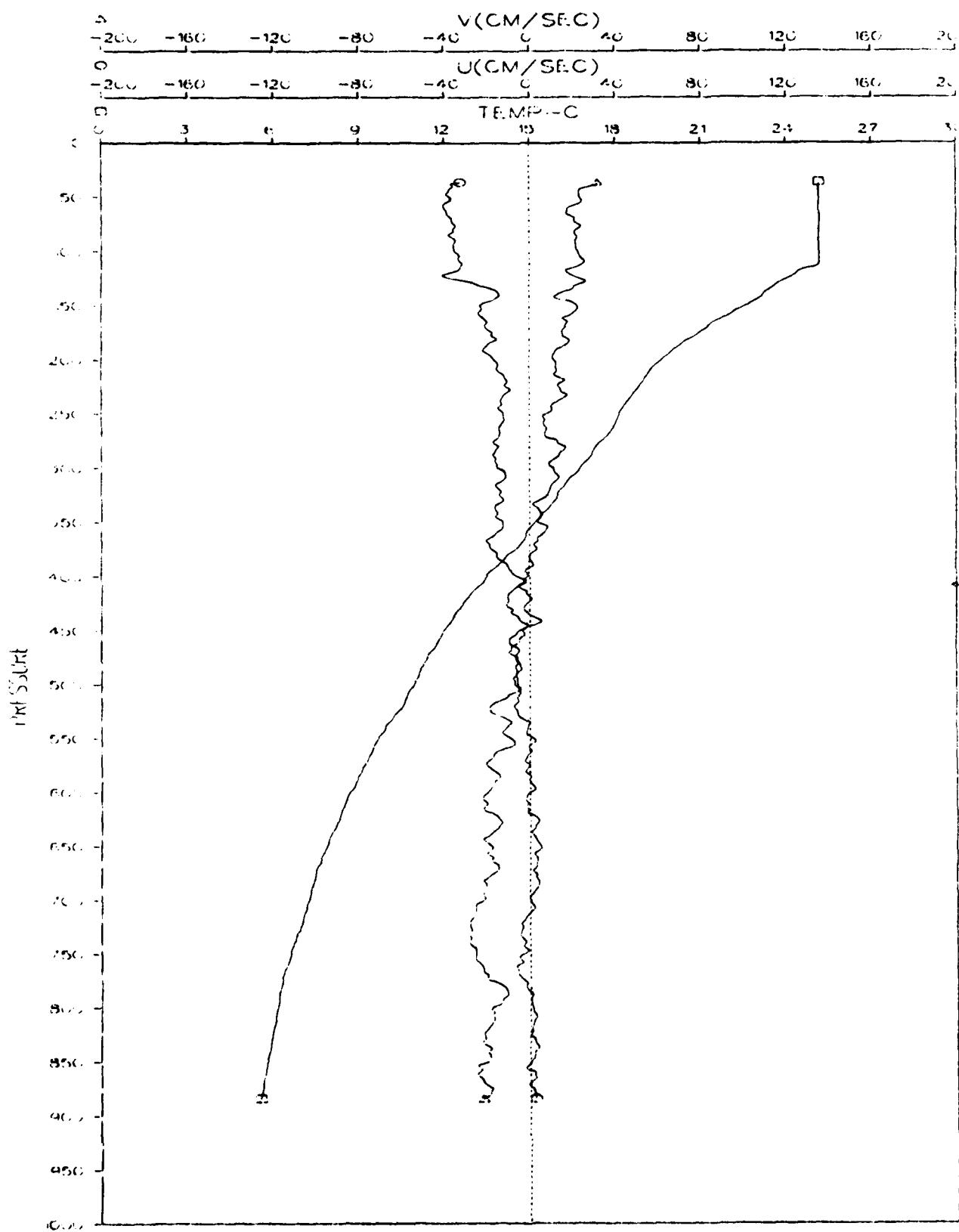


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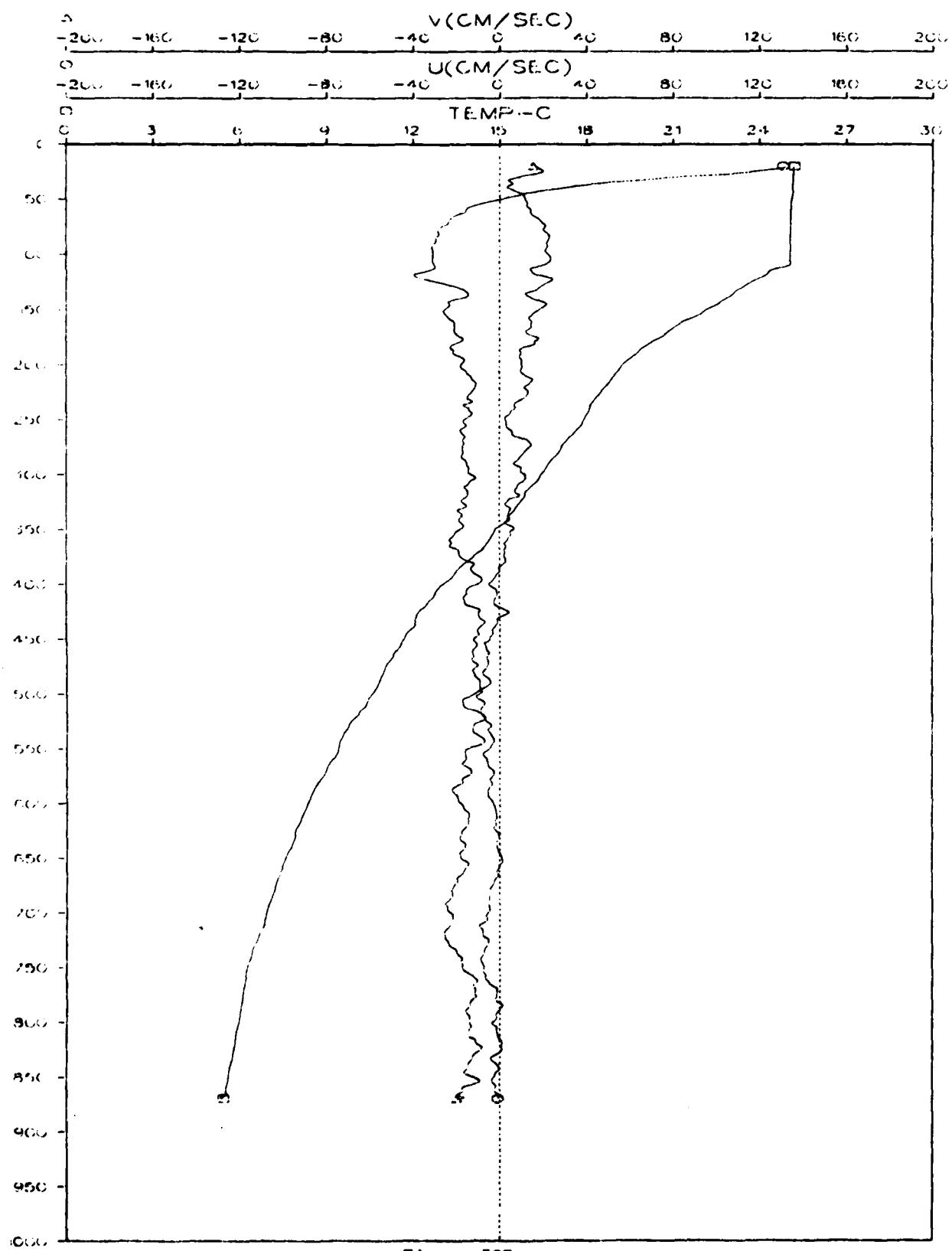


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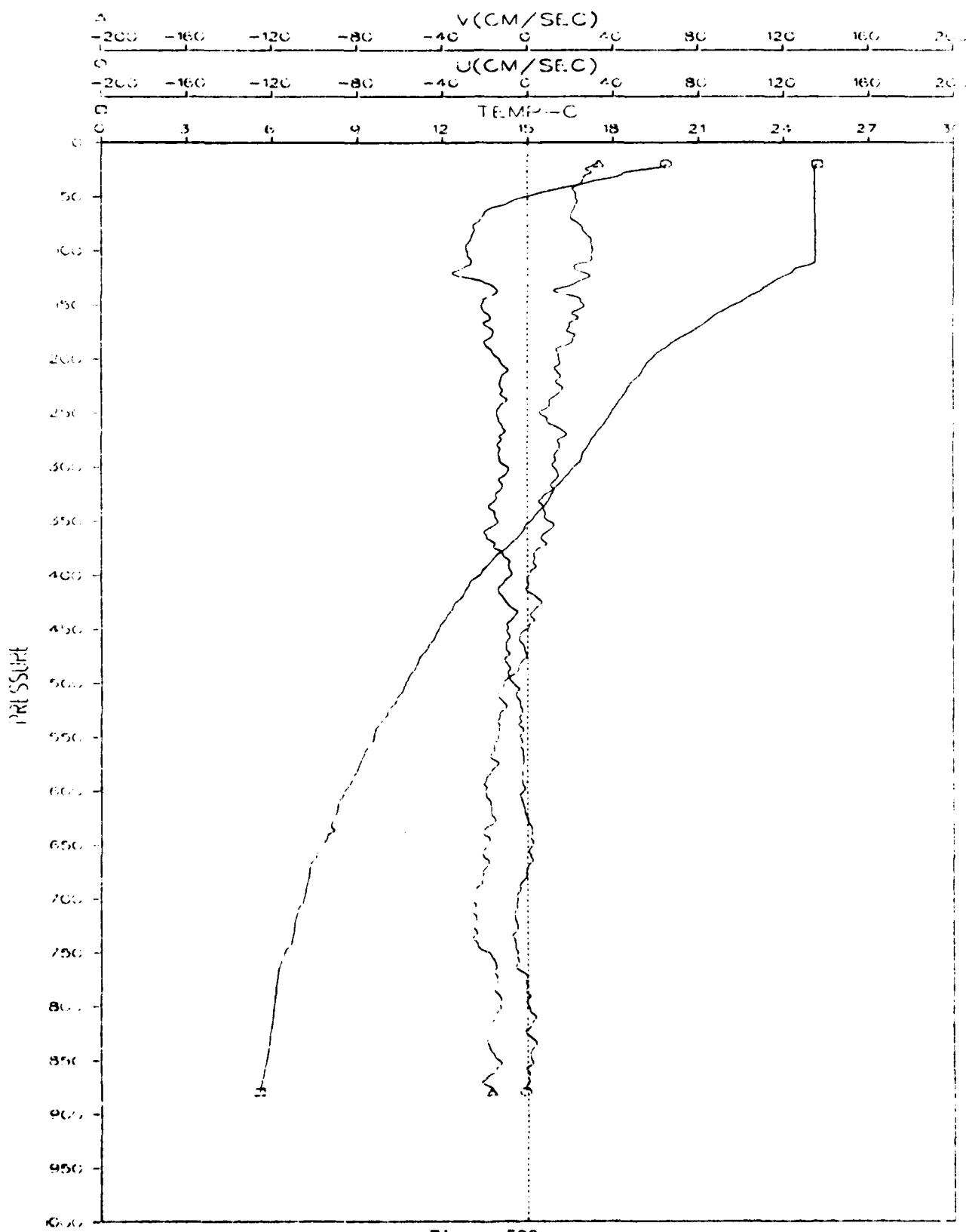


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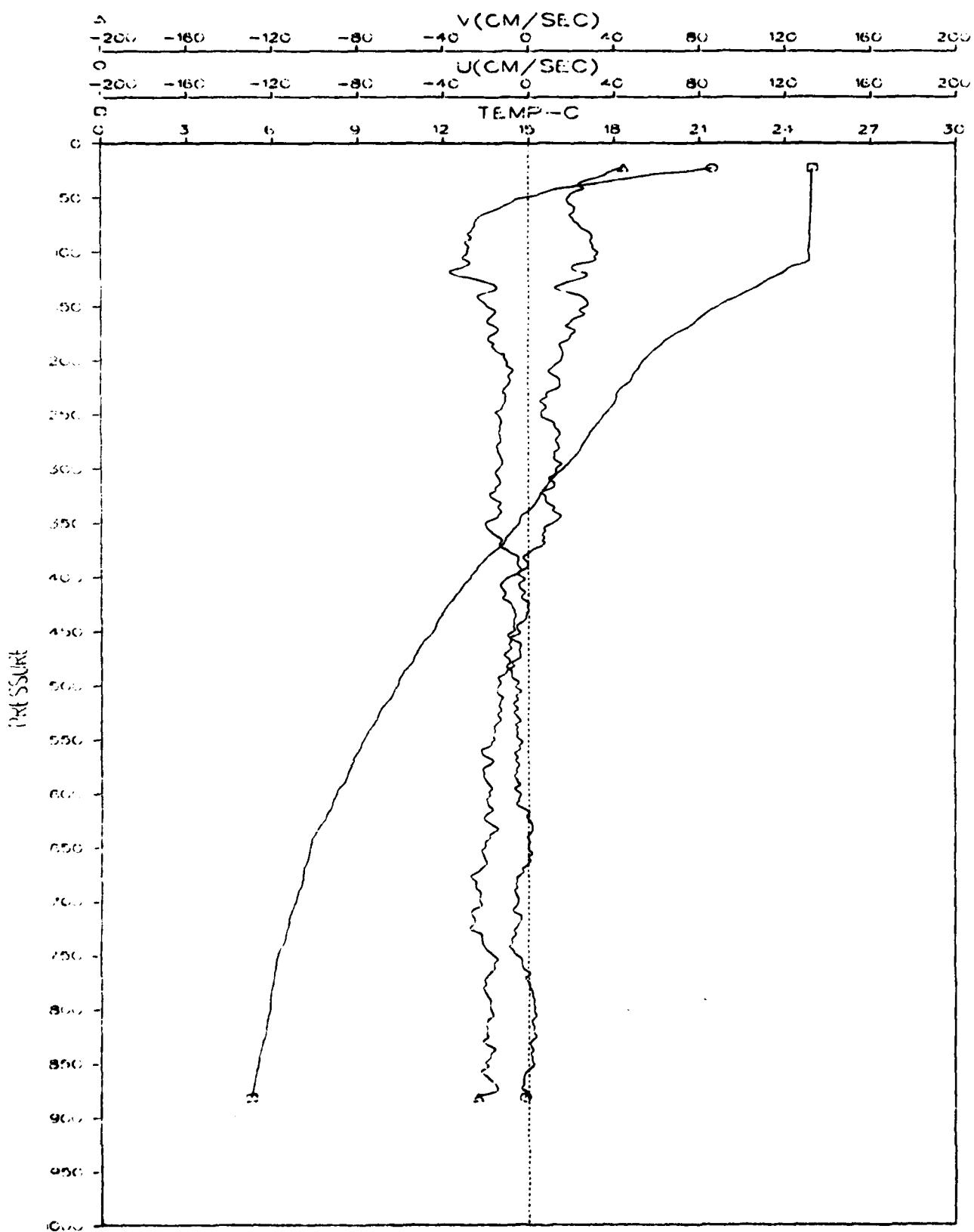


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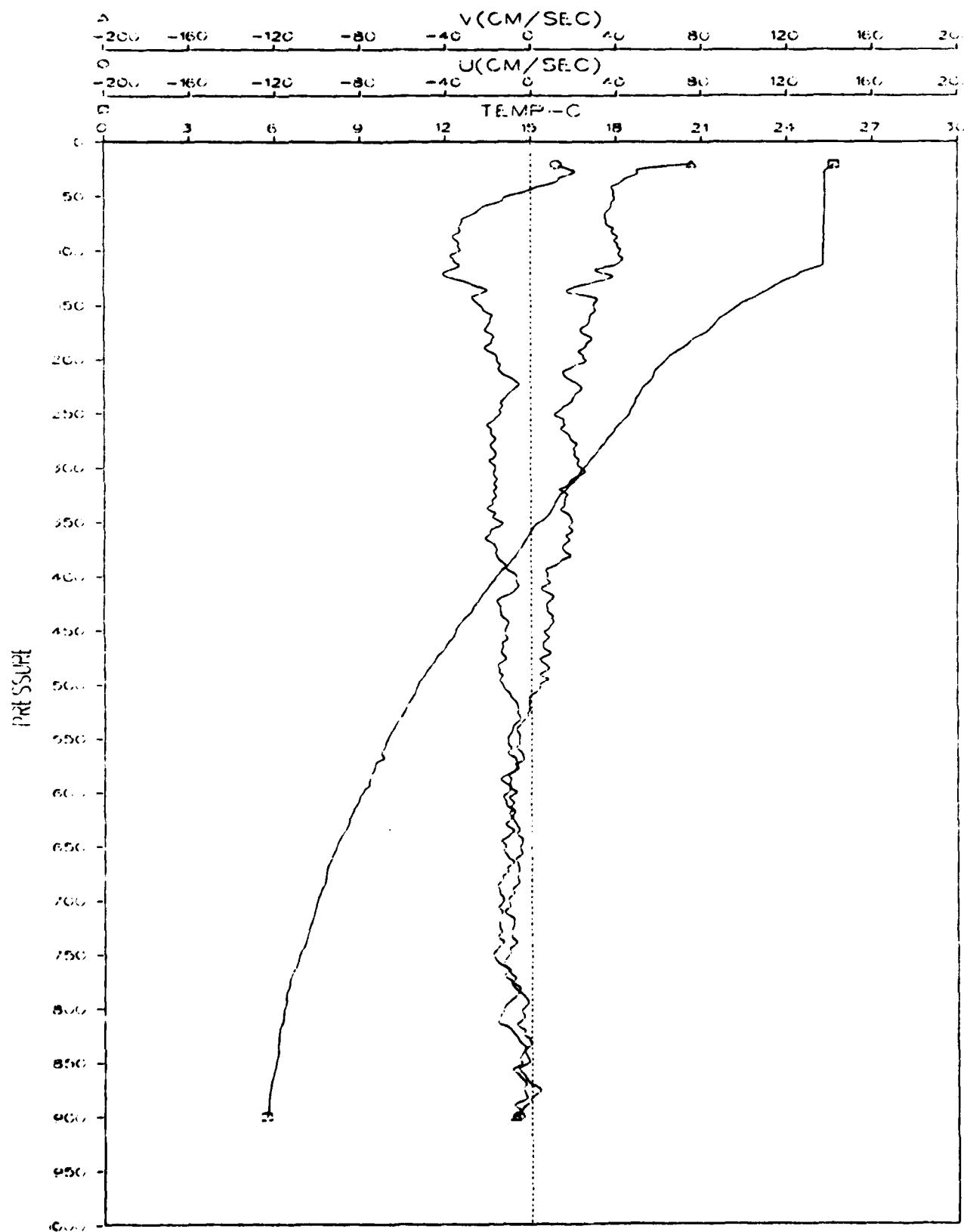


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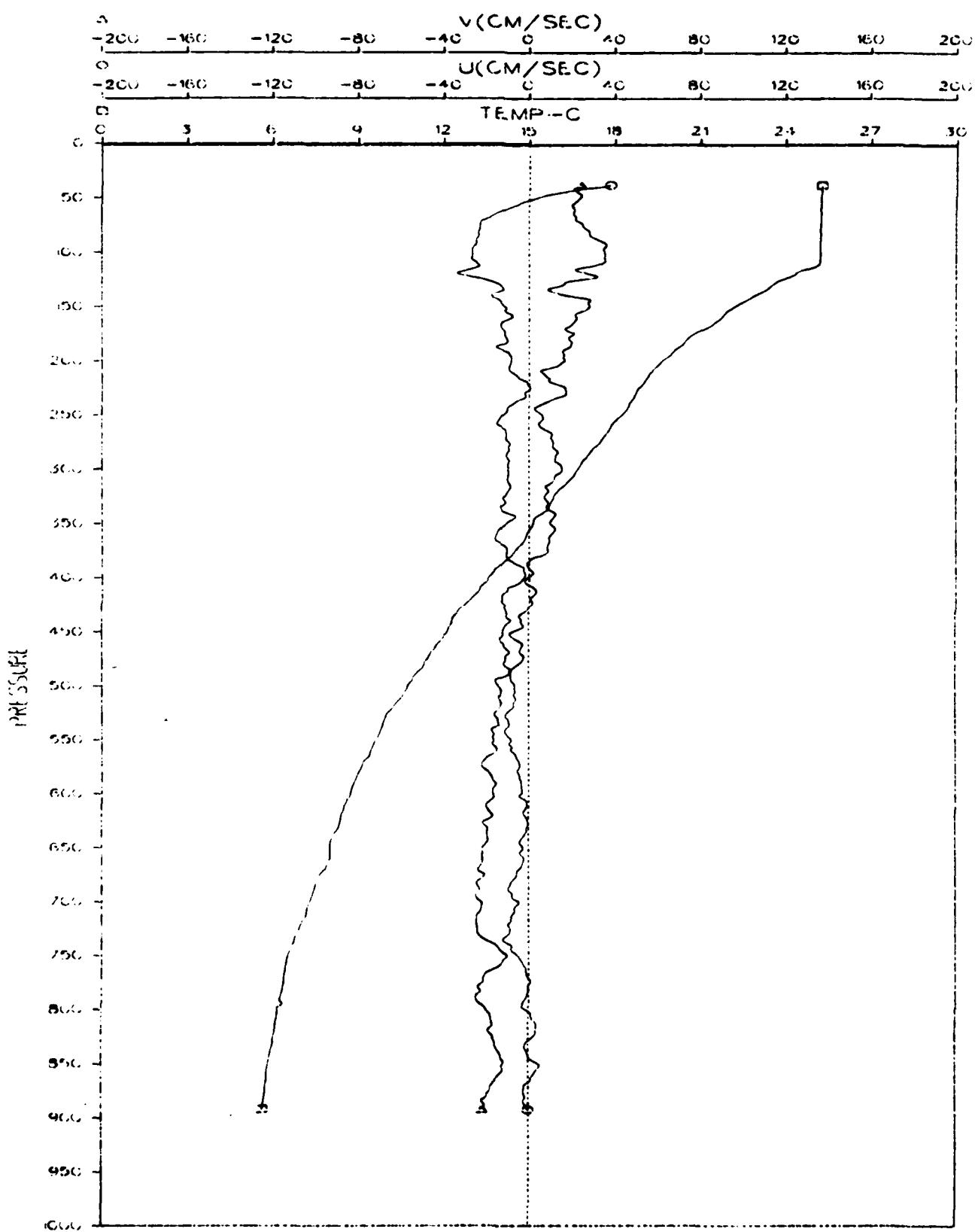


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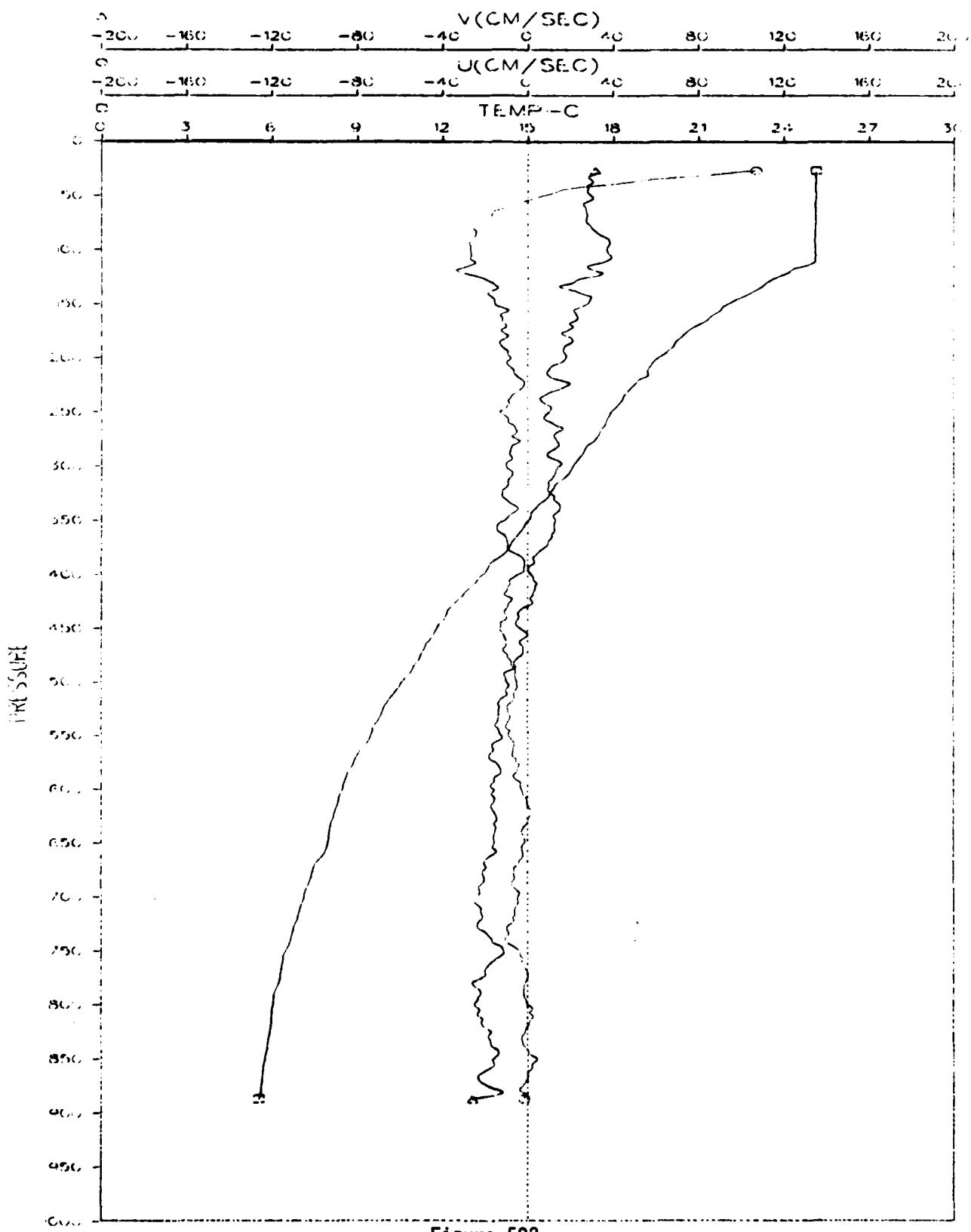


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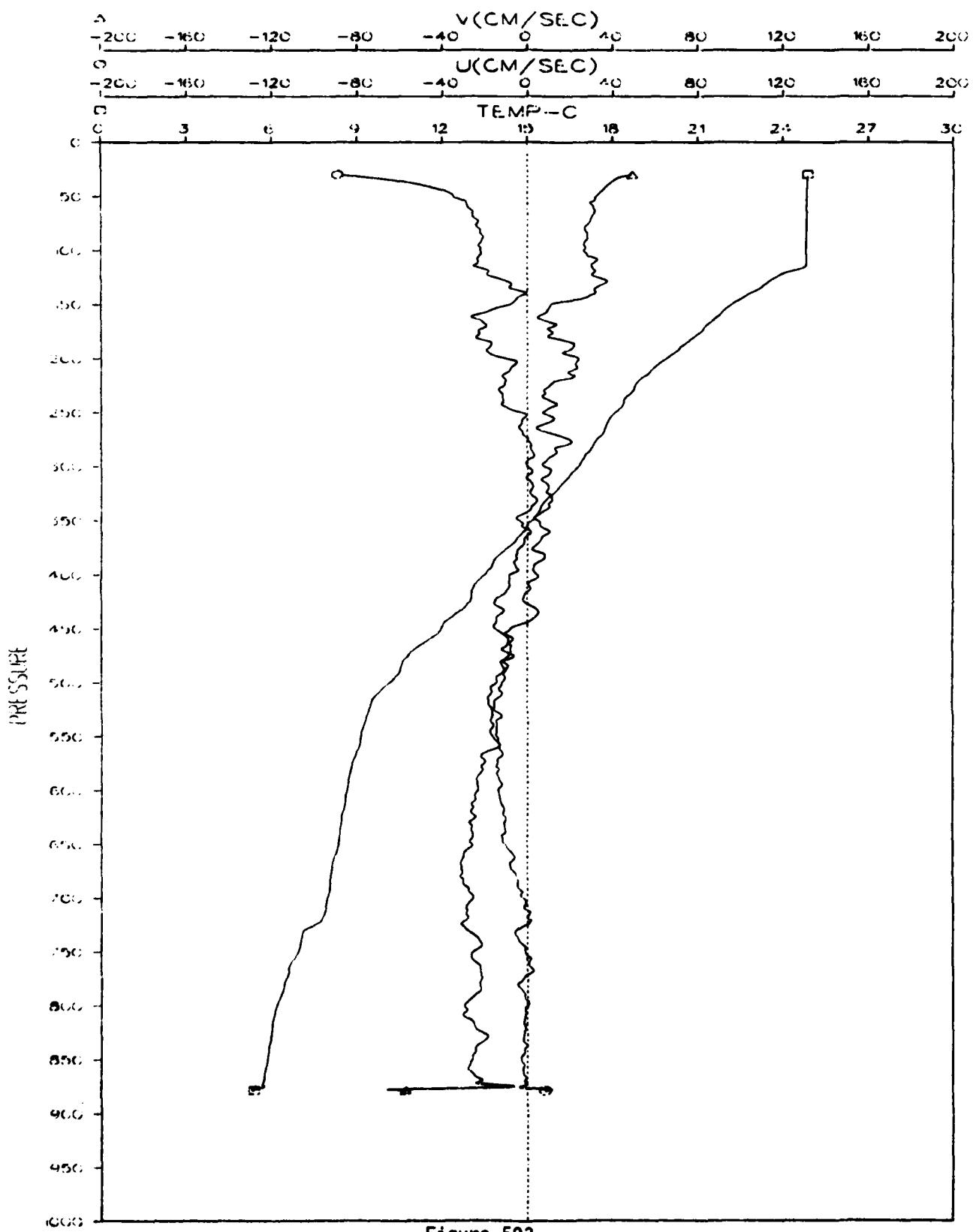


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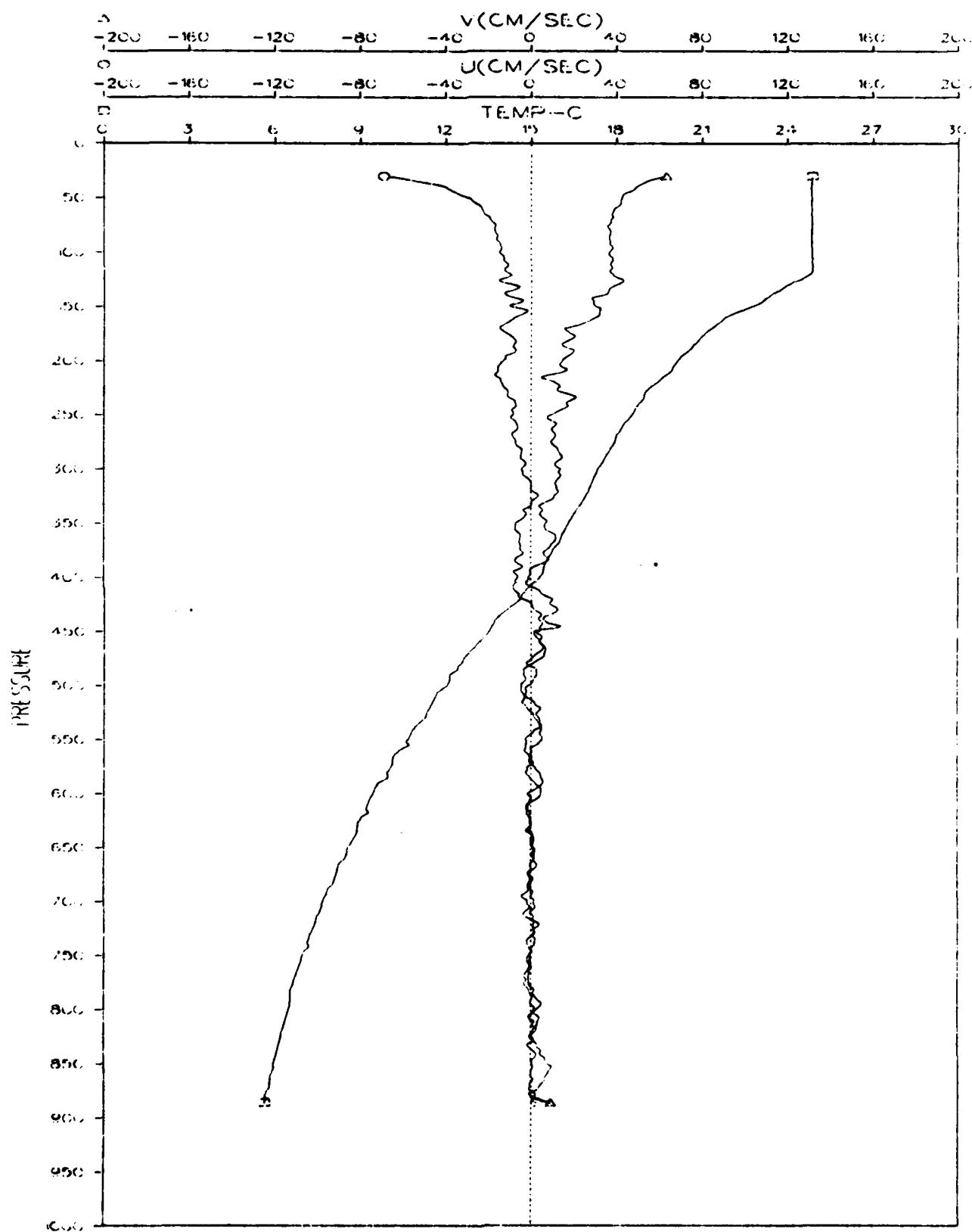


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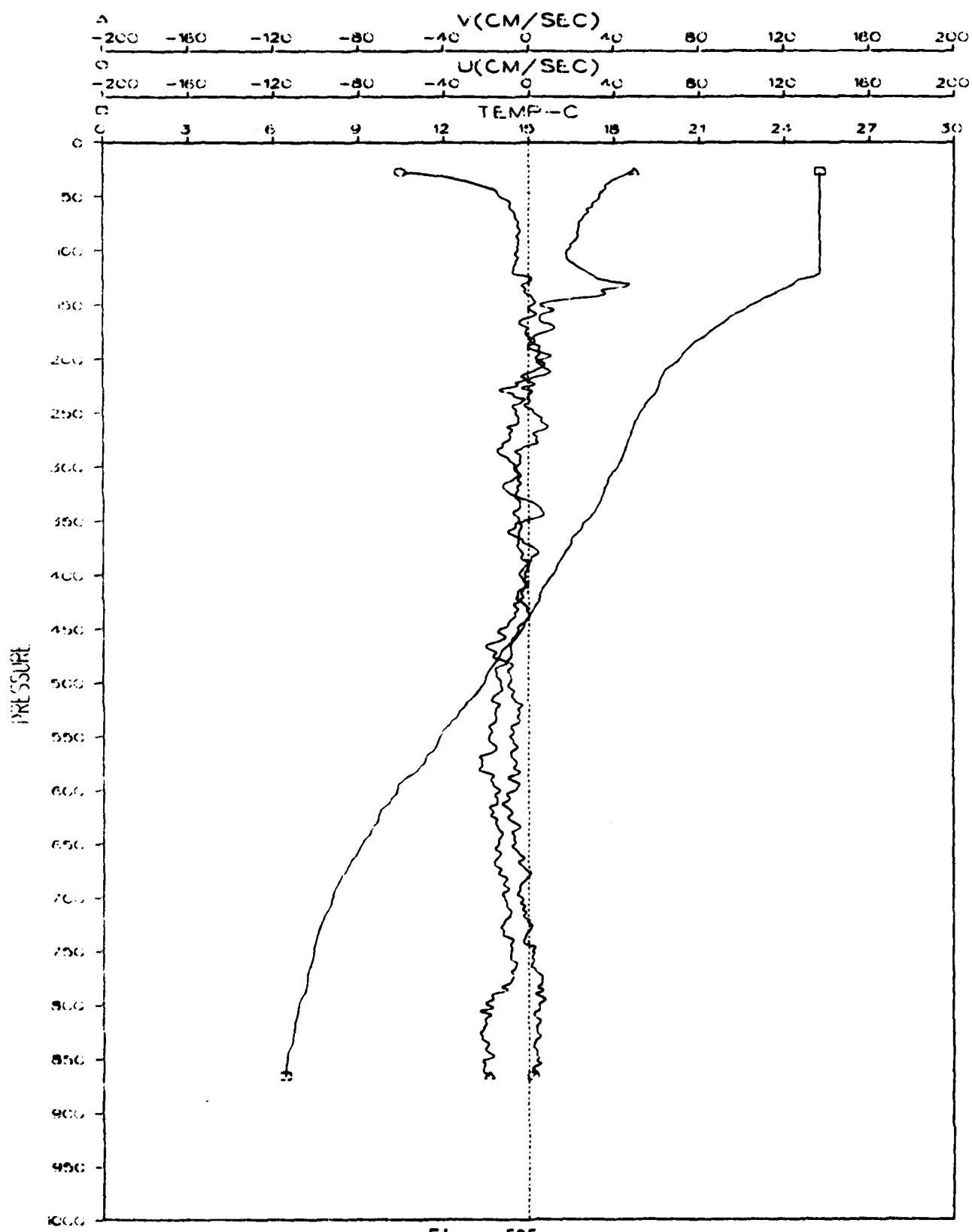


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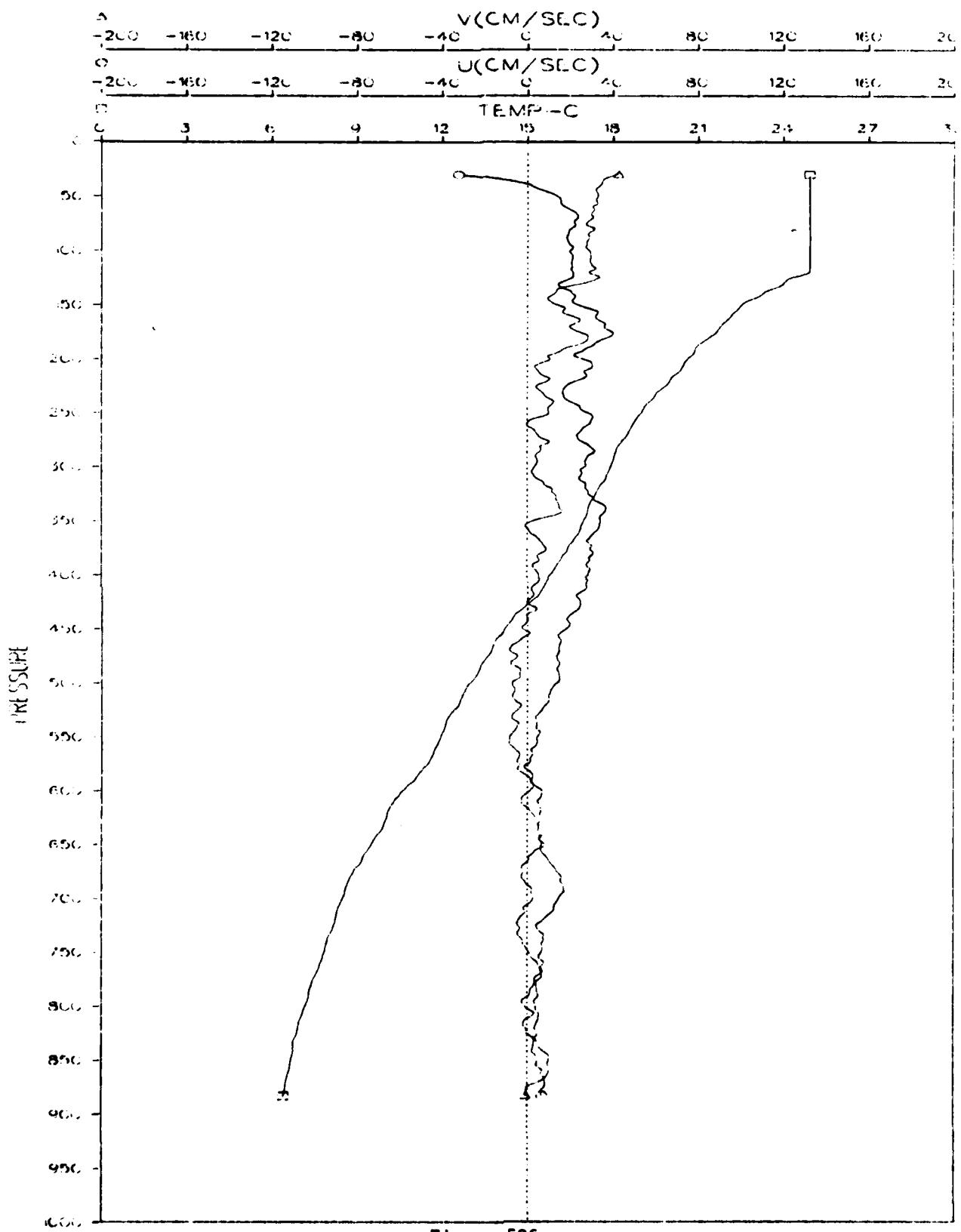


Figure 596

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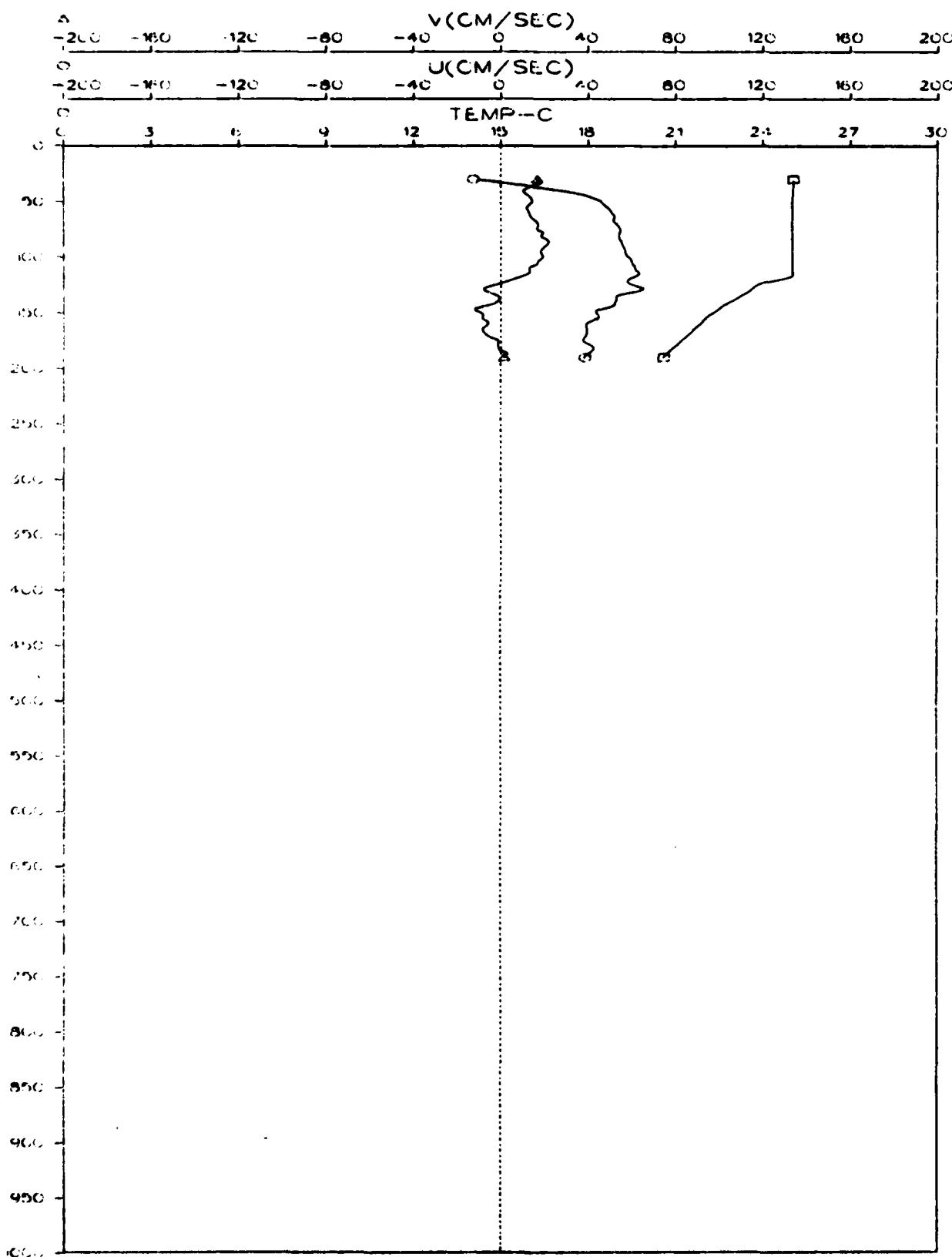


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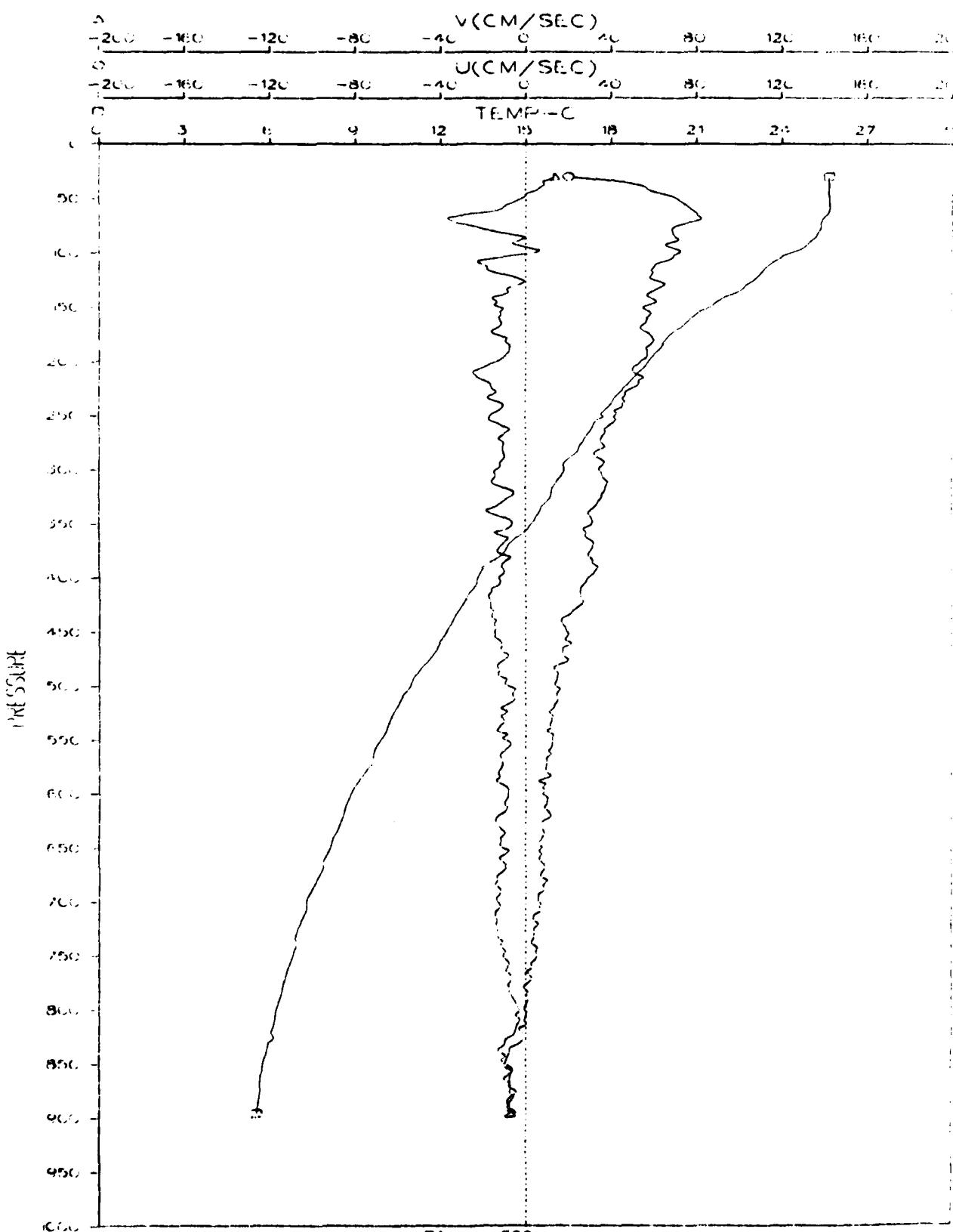


Figure 598

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
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		6. PERFORMING ORG. REPORT NUMBER
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9. PERFORMING ORGANIZATION NAME AND ADDRESS NORDA, Code 331 NSTL Station MS 39529		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 63704N/R129905/R129905300/ 73311A00
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The Acoustically Tracked Ocean Mooring (ATOM) study spanned the period 15 December 1979 - 17 January 1980. Time series of currents, temperatures, and mooring parameters as well as profiles of temperature, conductivity and current were obtained. This report presents these data and derived statistics as a graphical summary.		

